Vol. 983 Number 2

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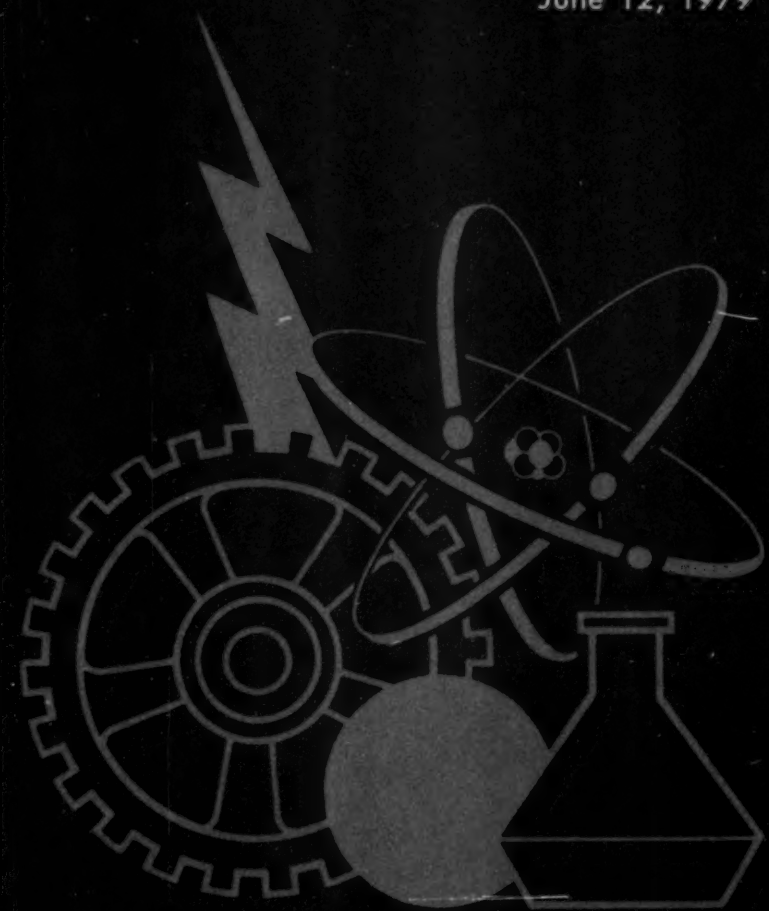
PATENTS

June 12, 1979



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 12, 1979 Volume 983 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) : Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

RE. 28,841, Re. S.N. 027,921, Filed Apr. 6, 1979, Cl. 128/92 D, OSTEOSYNTHETIC PRESSURE PLATE CONSTRUCTION, Martin Allgower, et al., Owner of Record: *Synthes AG, Chur, Switzerland,* Attorney or Agent: Caspar C. Schneider, Jr., et al., Ex. Gp.: 335

3,415,857, Re. S.N. 028,679, Filed Apr. 10, 1979, Cl. 260/429.7, PRODUCTION OF ORGANOTIN HALIDES, Peter Albert Theodore Hoye, Owner of Record: *Albright & Wilson Limited, Oldbury, England,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 117

3,700,774, Re. S.N. 026,471, Filed Apr. 2, 1979, Cl. 424/244, DIAZEPAM AND PROPANTHELINE COMPOSITION, Irwin Lerner, et al., Owner of Record: *Hoffmann-La Roche, Inc., Nutley, N.J.,* Attorney or Agent: Jon S. Saxe, et al., Ex. Gp.: 125

3,714,355, Re. S.N. 026,472, Filed Apr. 2, 1979, Cl. 424/244, MEDAZEPAM AND PROPANTHELINE COMPOSITION, Irwin Lerner, et al., Owner of Record: *Hoffmann-La Roche, Inc., Nutley, N.J.,* Attorney or Agent: Jon S. Saxe, et al., Ex. Gp.: 125

3,819,261, Re. S.N. 875,898, Filed Feb. 7, 1978, Cl. 355/14, TRANSFER TYPE ELECTROPHOTOGRAPHIC DUPLICATING APPARATUS, Masaya Ogawa, Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan,* Attorney or Agent: Robert J. Lasker, Ex. Gp.: 212

3,932,940, Re. S.N. 006,740, Filed Jan. 26, 1979, Cl. 32/14 A, DENTAL APPLIANCE, Frank J. Andren, Owner of Record: *Inventor,* Attorney or Agent: William C. Sessions, et al., Ex. Gp.: 333

3,988,299, Re. S.N. 953,379, Filed Oct. 23, 1978, Cl. 260/47 UA, ANAEROBIC ADHESIVE COMPOSITION HAVING IMPROVED STRENGTH AT ELEVATED TEMPERATURE CONSISTING OF UNSATURATED DIACRYLATE MONOMER AND MALEIMIDE ADDITIVE, Bernard M. Malofsky, Owner of Record: *Loctife Corporation, Newington, Conn.,* Attorney or Agent: J. Rodney Reck, et al., Ex. Gp.: 143

3,998,058, Re. S.N. 971,991, Filed Dec. 18, 1978, Cl. 60/652, METHOD OF EFFECTING FAST TURBINE VALVING FOR IMPROVEMENT OF POWER SYSTEM STABILITY, Robert H. Park, Owner of Record: *Fast Load Control, Inc., Brewster, Mass.,* Attorney or Agent: None, Ex. Gp.: 341

4,014,915, Re. S.N. 013,324, Filed Feb. 21, 1979, Cl. 260/463, OXIME CARBONATES, Masumi Itoh, et al., Owner of Record: *Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan,* Attorney or Agent: Jordan B. Bierman, et al., Ex. Gp.: 124

4,016,060, Re. S.N. 027,060, Filed Apr. 4, 1979, Cl. 204/176, CORONA REACTION METHOD AND APPARATUS, Frank Eugene Lowther, Owner of Record: *Union Carbide Corporation, New York, N.Y.,* Attorney or Agent: Harrie M. Humphreys, et al., Ex. Gp.: 114

4,019,703, Re. S.N. 027,283, Filed Apr. 4, 1979, Cl. 248/004, TROLLING MOTOR SAFETY MOUNT, Robert W. Meredith, et al., Owner of Record: *Inventors,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 355

4,020,888, Re. S.N. 023,837, Filed Mar. 26, 1979, Cl. 160/66, RETRACTABLE AWNING, Albert E. Upton, Jr., et al., Owner of Record: *The Scott & Fetzer Co., Lakewood, Ohio,* Attorney or Agent: Gary M. Polumbus, et al., Ex. Gp.: 351

4,035,073, Re. S.N. 023,853, Filed Mar. 26, 1979, Cl. 355/24, DUPLEX REPRODUCTION MACHINE, George Del Vecchio, Owner of Record: *Inventor,* Attorney or Agent: James J. Ralabate, et al., Ex. Gp.: 211

4,042,645, Re. S.N. 021,982, Filed Mar. 19, 1979, Cl. 260/830 P, PROCESS FOR PRODUCING THERMOSETTING FINISHING POWDERS, Kuniomi Hirota, et al., Owner of Record: *Inventor,* Attorney or Agent: Eugene Sabol, Ex. Gp.: 142

4,044,193, Re. S.N. 007,626, Filed Jan. 29, 1979, Cl. 429/40, FINELY PARTICULATED COLLOIDAL PLATINUM COMPOUND AND SOL FOR PRODUCING THE SAME AND METHOD OF PREPARATION OF FUEL CELL ELECTRODES AND THE LIKE EMPLOYING THE SAME, Henry G. Petrow, et al., Owner of Record: *Prototech Company, Newton, Mass.,* Attorney or Agent: Robert H. Rines, et al., Ex. Gp.: 114

4,067,068, Re. S.N. 027,544, Filed Apr. 6, 1979, Cl. 2/406, PANTY, Henry Bregstein, et al., Owner of Record: *The Proctor & Gamble Company, Cincinnati, Ohio,* Attorney or Agent: Jeffrey R. Melnikoff, et al., Ex. Gp.: 353

4,072,442, Re. S.N. 021,425, Filed Mar. 16, 1979, Cl. 417/218, VARIABLE DELIVERY HYDRAULIC PUMP, Takeshi Horiuchi, Owner of Record: *Daikin Kogyo Co. Ltd., Osaka-shi, Japan,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 343

4,081,895, Re. S.N. 968,920, Filed Dec. 13, 1978, Cl. 29/573, METHOD FOR CONSTRUCTING A THERMOELECTRIC MODULE AND THE MODULE SO OBTAINED, Giovanni Germano, et al., Owner of Record: *Snam Progetti S.P.A., Milan, Italy and Cnen-Comitato Nazionale Per L'Energia Nucleare, Rome, Italy,* Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 254

4,087,848, Re. S.N. 021,789, Filed Mar. 19, 1979, Cl. 361/103, THERMALLY SELF-PROTECTED POWER SWITCHING SEMICONDUCTOR DEVICE, Roy Hyink, et al., Owner of Record: *Cutler-Hammer, Inc., Milwaukee, Wis.,* Attorney or Agent: Hugh R. Rather, et al., Ex. Gp.: 212

4,099,935, Re. S.N. 932,430, Filed Aug. 9, 1978, Cl. 51/309 R, CUTTING TEETH FOR ETCHED ABRASIVES, Herbert M. Bond, et al., Owner of Record: *Buckee-Mears Co., St. Paul, Minn.,* Attorney or Agent: Marvin Jacobson, et al., Ex. Gp.: 147

4,100,216, Re. S.N. 011,962, Filed Feb. 14, 1979, Cl. 260/664 PY, PREPARATION OF BETA-METHYLTETRAMETHYLENE NORTRICYCLANE, Harry K. Myers, Jr., et al., Owner of Record: *Sun Oil Company, Philadelphia, Pa.,* Attorney or Agent: J. Edward Hess, et al., Ex. Gp.: 116

4,100,916, Re. S.N. 026,088, Filed Apr. 2, 1979, Cl. 128/2 V, THREE-DIMENSIONAL ULTRASONIC IMAGING OF ANIMAL SOFT TISSUE, Donald L. King, Owner of Record: *Inventor,* Attorney or Agent: Eugene F. Buell, et al., Ex. Gp.: 335

4,102,310, Re. S.N. 026,490, Filed Apr. 2, 1979, Cl. 123/117 R, ELECTRONIC CIRCUIT FOR USE IN A VARIETY OF ENGINE CONTROL SYSTEMS, LaVerne A. Caron, Owner of Record: *Chrysler Corporation, Highland Park, Mich.,* Attorney or Agent: George L. Boller, et al., Ex. Gp.: 342

4,110,460, Re. S.N. 022,455, Filed Mar. 21, 1979, Cl. 424/270, 2,3-DIHYDRO-IMIDAZO(2,1-B)-THIAZOLE DERIVATIVES AND APPLICATIONS THEREOF, Jacques Louis Edouard Baeta, Owner of Record: *Metabio-Joullie, Meudon, France,* Attorney or Agent: Gordon W. Hueschen, Ex. Gp.: 125

4,117,959, Re. S.N. 021,147, Filed Mar. 16, 1979, Cl. 222/590, METHOD AND SINGLE PIECE ANNULAR NOZZLE TO PREVENT ALUMINA BUILDUP DURING CONTINUOUS CASTING OF AL-KILLED STEEL, Eugene A. Golas, et al., Owner of Record: *United States Steel Corporation, Pittsburgh, Pa.,* Attorney or Agent: John F. Carney, Ex. Gp.: 311

4,125,738, Re. S.N. 009,043, Filed Feb. 2, 1979, Cl. 136/234, THERMOCOUPLE ELEMENT, Michael John Nichols, Owner of Record: *Thermal Syndicate Limited, Wallsend, England,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 223

4,135,497, Re. S.N. 021,112, Filed Mar. 16, 1979, Cl. 128/2 H, APPARATUS FOR DETECTING TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, AND METHOD THEREOF, Phillip H. Meyers, et al., Owner of Record: *E-Z-EM Company, Inc., Westbury, N.Y.,* Attorney or Agent: Lloyd McAulay, et al., Ex. Gp.: 335

PATENT NOTICES

Certificates of Correction for the Week of June 12, 1979

Re. 29,943	4,107,302	4,126,662	4,137,256
3,775,693	4,107,423	4,126,739	4,137,403
3,830,015	4,108,392	4,126,746	4,137,616
3,892,252	4,108,629	4,126,773	4,137,666
3,897,307	4,108,916	4,126,945	4,137,942
3,931,924	4,109,071	4,127,092	4,138,078
3,954,627	4,109,162	4,127,391	4,138,467
3,968,501	4,109,448	4,127,730	4,138,474
3,991,011	4,109,452	4,127,897	4,138,523
4,007,115	4,109,453	4,127,946	4,138,706
4,020,879	4,110,861	4,128,028	4,138,994
4,022,854	4,111,221	4,128,047	4,139,065
4,041,951	4,111,899	4,128,235	4,139,148
4,047,622	4,111,977	4,128,515	4,139,167
4,050,779	4,112,196	4,128,551	4,139,378
4,052,226	4,112,411	4,128,881	4,139,722
4,053,744	4,115,510	4,129,170	4,139,766
4,061,632	4,116,596	4,129,174	4,139,995
4,064,161	4,116,660	4,129,372	4,140,022
4,064,352	4,116,758	4,129,464	4,140,044
4,067,890	4,116,893	4,129,562	4,140,171
4,071,695	4,116,896	4,129,755	4,140,443
4,072,760	4,117,567	4,129,889	4,140,563
4,077,956	4,118,600	4,129,941	4,140,757
4,080,346	4,118,637	4,130,019	4,140,822
4,085,591	4,119,297	4,130,334	4,140,891
4,086,407	4,119,748	4,130,389	4,141,181
4,087,836	4,119,774	4,130,451	4,141,307
4,090,785	4,120,095	4,130,458	4,141,414
4,093,365	4,120,141	4,130,537	4,141,512
4,093,463	4,120,544	4,130,574	4,141,799
4,094,001	4,120,659	4,130,780	4,141,835
4,094,425	4,120,845	4,130,818	4,142,560
4,094,800	4,121,130	4,130,825	4,142,640
4,095,019	4,121,292	4,131,004	4,143,002
4,095,332	4,121,299	4,131,371	4,143,203
4,096,392	4,121,745	4,131,440	4,143,577
4,096,997	4,121,896	4,131,520	4,143,762
4,097,316	4,122,528	4,131,635	4,143,975
4,097,406	4,122,588	4,131,660	4,144,011
4,098,347	4,123,577	4,131,763	4,144,083
4,098,509	4,123,589	4,131,785	4,144,084
4,098,904	4,123,981	4,132,117	4,144,085
4,099,644	4,123,984	4,132,196	4,144,163
4,100,471	4,124,392	4,132,353	4,144,500
4,101,260	4,124,523	4,132,552	4,144,542
4,101,663	4,124,547	4,132,756	4,145,147
4,101,843	4,124,594	4,132,825	4,145,294
4,101,901	4,124,615	4,133,230	4,145,304
4,102,420	4,124,820	4,133,678	4,145,431
4,102,453	4,125,000	4,134,096	4,145,660
4,102,540	4,125,265	4,134,242	4,145,660
4,103,013	4,125,280	4,134,464	4,146,030
4,103,142	4,125,607	4,134,676	4,146,375
4,103,385	4,125,802	4,135,704	4,146,572
4,103,939	4,125,833	4,136,097	4,146,954
4,104,718	4,126,034	4,136,462	4,147,343
4,106,214	4,126,191	4,136,545	
4,106,230	4,126,319	4,136,608	
4,107,210	4,126,480	4,137,081	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20234

Patent application 949,367. Full Duplexer Apparatus Using Frequency Selective Limiters. Filed Oct. 6, 1978.

Patent 4,104,087. Method for Fabricating MNOS Memory Circuits. Filed Apr. 7, 1977. Patented Aug. 1, 1978. Not available NTIS.

Patent 4,105,339. Azimuth Monitoring System. Filed Jan. 24, 1977. Patented Aug. 8, 1978. Not available NTIS.

Patent 4,107,980. Assessment of Flaw Growth Potential in Structural Components. Filed June 7, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,108,073. Armor Piercing Projectile. Filed Feb. 27, 1975. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,109,172. High Piezoelectric Coupling-Temperature Compensated Berlirite Substrate Member for Surface Acoustic Wave Devices. Filed Aug. 19, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,109,173. High Piezoelectric Coupling, Low Diffraction Loss, Temperature Compensated Berlinite Substrate Members for Surface Acoustic Wave Devices. Filed Aug. 19, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,110,173. Low Offset Field Effect Transistor Correlator Circuit. Filed Nov. 19, 1976. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,110,778. Narrow-Band Inverted Homo-Heterojunction Avalanche Photodiode. Filed June 21, 1977. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,111,463. Separable Coupling for Plural Pressure Lines. Filed June 7, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,114,352. Protective Jacket of Chronically Instrumented Dogs. Filed July 19, 1976. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,114,420. Environmental Test Chamber System. Filed Sept. 12, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,114,510. Muzzle Clamp Assembly. Filed Apr. 28, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,114,840. Parachute Canopy Deployment Control Apparatus. Filed Oct. 21, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,114,978. Buried Grating Shared Aperture Device. Filed July 1, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,115,616. Self-Sealing Fuel Line Assembly. Filed Feb. 9, 1978. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,115,736. Probe Station. Filed Mar. 9, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,115,749. Microwave Hybrid Phase Matching Spacer. Filed Apr. 25, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,115,775. Deep Penetration Forebody With Tethered Radar Reflector. Filed Sept. 29, 1976. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,115,784. Deployable Ground Plane Antenna. Filed Feb. 4, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,116,717. Ion Implanted Eutectic Gallium Arsenide Solar Cell. Filed Dec. 8, 1976. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,117,318. Optical Position Pick-Off in Zero-Drag Satellite. Filed May 16, 1977. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,117,480. Real Time Signal Correlator for High Resolution Radar. Filed Jan. 12, 1965. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,117,485. Radar Target Cross Section Control Method and Means. Filed Jan. 5, 1971. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,126,047. Surface Acoustic Wave Rate Sensor and Position Indicator. Filed Apr. 25, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,126,381. Converging Wave Unstable Resonator. Filed June 24, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,126,735. Porous Electrode Primary Battery Having State of Charge Sensing Electrode, Filed Oct. 21, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,126,832. Diffraction Grating Coupled Optically Pumped Laser. Filed May 26, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,127,808. Engine Chip Detector. Filed Oct. 7, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,827. Optimized Mode-Locked, Frequency Doubled Laser. Filed Apr. 7, 1977. Patented Nov. 28, 1978. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Service Division, Federal Bldg., Agricultural Research Service Hyattsville, Md. 20782

Patent application 910,153. Process for Producing a Low-Gossypol Protein Product From Glanded Cottonseed. Filed May 26, 1978.

Patent application 938,593. Dust Precutter and Method. Filed Aug. 31, 1978.

Patent application 943,893. Extraction of Cottonseed and Concentrates To Improve the Color of Protein Isolate. Filed Sept. 19, 1978.

Patent application 964,853. Quarternary Phosphonium Salts Bearing Carbamate Groups. Filed Nov. 29, 1978.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent application 831,191. Diffusion Hydrogen Meter. Filed Sept. 7, 1977.

Patent 4,078,226. Input Apparatus for Dynamic Signature Verification Systems. Filed Mar. 16, 1977. Patented Mar. 7, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 901,955. Optical Oscillator. Filed May 1, 1978.

Patent application 958,231. Derotation Plate. Filed Nov. 6, 1978.

Patent application 958,459. Method of Anodically Leveling Semiconductor Layers. Filed Nov. 6, 1978.

Patent application 959,383. Millimeter Wave Microstrip Triplexer. Filed Nov. 9, 1978.

Patent application 960,992. Coherent Frequency Shift Key Demodulator. Filed Nov. 15, 1978.

Patent 3,503,814. Pyrotechnic Composition Containing Nickel and Aluminum. Filed May 3, 1968. Patented Mar. 31, 1970. Not available NTIS.

Patent 3,973,216. Laser With a High Frequency Rate of Modulation. Filed Apr. 28, 1975. Patented Aug. 3, 1976. Not available NTIS.

Patent 4,054,364. Apparatus for Transmitting Light Through Cassegrain Optics. Filed Feb. 2, 1976. Patented Oct. 18, 1977. Not available NTIS.

Patent 4,063,509. Device for Stimulation of Geothermal Wells. Filed May 17, 1976. Patented Dec. 20, 1977. Not available NTIS.

Patent 4,068,192. Gas Laser Starting. Filed Apr. 15, 1976. Patented Jan. 10, 1978. Not available NTIS.

Patent 4,088,240. Fuel Tank Leakage Fiber Flow Sealant. Filed Sept. 13, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,093,384. Narrow Angle, Narrow Bandwidth Optical Receiver System. Filed Oct. 4, 1976. Patented June 6, 1978. Not available NTIS.

Patent 4,096,447. Unstable Resonator Laser System. Filed Nov. 24, 1976. Patented June 20, 1978. Not available NTIS.

Patent 4,100,320. Custom Fitted, Light Weight, Air Conditioned Protective Helmet. Filed Mar. 1, 1976. Patented July 11, 1978. Not available NTIS.

Patent 4,100,541. High Speed Manchester Encoder. Filed July 26, 1976. Patented July 11, 1978. Not available NTIS.

Patent 4,109,359. Method of Making Ferroelectric Crystals Having Tailored Domain Patterns. Filed June 7, 1976. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,110,111. Metal Alloy and Method of Preparation Thereof. Filed July 28, 1976. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,112,455. Field-Effect Transistor With Extended Linear Logarithmic Transconductance. Filed Jan. 27, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,115,704. Parametric Energy Coupled Uninterruptible Power Supply. Filed Apr. 27, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,119,941. Acoustic Coupler. Filed Aug. 8, 1977. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,121,209. Two-Axis Motion Compensation for AMTI. Filed Oct. 20, 1977. Patented Oct. 17, 1978. Not available NTIS.

Patent 4,121,290. Analog Sound Velocity Calculator. Filed Apr. 18, 1977. Patented Oct. 17, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 4,124,330. Cam-Operated Pitch-Change Apparatus. Filed Oct. 9, 1974. Patented Nov. 7, 1978. Not available NTIS.

Patent 4,132,069. Integrated Gas Turbine Engine-Nacelle. Filed Dec. 22, 1976. Patented Jan. 2, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent 4,110,833. Balanced AC Correlator System. Filed Nov. 19, 1976. Patented Aug. 29, 1978. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent 4,082,531. Holder for Rotating Glass Body. Filed Jan. 24, 1977. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,083,243. Method of Measuring the Mass Flow Rate of a Substance Entering a Cocurrent Fluid Stream. Filed Apr. 22, 1977. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,083,272. Omega-X Micromachining System. Filed Dec. 14, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,109. High-Current Power Supply for Accelerator Magnets. Filed June 8, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,209. Rotating Superconductor Magnet for Producing Rotating Lobed Magnetic Field Lines. Filed May 21, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,091,336. Direct Nuclear Pumped Laser. Filed May 27, 1976. Patented May 23, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 874,005. Praseodymium Blue-Green Laser System. Filed Jan. 31, 1978.

Patent application 914,311. Coupling for Misaligned Shafts. Filed June 15, 1978.

Patent application 922,610. Zinc Oxide on Silicon Device for Parallel In, Serial Out, Discrete Fourier Transformer. Filed July 7, 1978.

Patent application 951,105. Variable Power Attenuator for Light Beams. Filed Oct. 13, 1978.

Patent application 954,263. Dual Speed Fluid Control Apparatus. Filed Oct. 24, 1978.

Patent application 954,707. Fiber Optic Laser Beam Detector. Filed Oct. 25, 1978.

Patent application 962,854. End-Butt Optical Fiber Coupler. Filed Oct. 13, 1978.

Patent application 962,855. Laser Spraying. Filed Nov. 22, 1978.

Patent 4,104,608. Heave Meter. Filed Mar. 30, 1977.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters NASA—Code GP–2, Washington, D.C. 20546

Patent application 950,877. Prosthetic Urinary Sphincter. Filed Oct. 12, 1978.

Patent application 953,389. Chromatically Corrected Virtual Image Display. Filed Oct. 23, 1978.

Patent application 956,160. Radio Frequency Arraying Method for Receivers. Filed Oct. 31, 1978.

Patent application 964,754. Catalyst Surfaces for the Chromous/Chromic Redox Couple. Filed Nov. 29, 1978.

Patent application 965,367. System for Displaying at a Remote Station Date Generated at a Central Station and for Powering the Remote Station From the Central Station. Filed Nov. 30, 1978.

Patent application 969,759. Fluidized Bed Coal Combustion Reactor. Filed Dec. 15, 1978.

Patent application 969,760. Photomechanical Transducer. Filed Dec. 15, 1978.

Patent application 969,761. Real-Time Multiple-Look Synthetic Aperture Radar Processor for Spacecraft Applications. Filed Dec. 15, 1978.

Patent application 969,762. Discriminator Aided Phase Look Acquisition for Suppressed Carrier Signals. Filed Dec. 15, 1978.

Patent application 971,473. Cross-Linked Polyvinyl Alcohol and Method of Making Same. Filed Dec. 20, 1978.

Patent application 971,475. In-Situ Cross-Linking of Polyvinyl Alcohol. Filed Dec. 20, 1978.

Patent application 971,596. Method of Cross-Linking Polyvinyl Alcohol and Other Water Soluble Resins. Filed Dec. 20, 1978.

Patent application 974,471. Frequency Translating Phase Conjugation Circuit for Active Retrodirective Antenna Array. Filed Dec. 29, 1978.

Patent application 974,473. High-Speed Multiplexing of Keyboard Data Inputs. Filed Dec. 29, 1978.

Patent application 974,474. Process for Preparation of Large-Particle Size Monodisperse Latexes. Filed Dec. 29, 1978.

Patent application 974,476. Indomethacin-Antihistamine Combination for Gastric Ulceration Control. Filed Dec. 29, 1978.

Patent 4,106,587. Sound-Suppressing Structure With Thermal Relief. Filed July 2, 1976. Patented Aug. 15, 1978. Not available NTIS.

Patent 4,111,058. Electronically Scanned Pressure Sensor Module With In Situ Calibration Capability. Filed Sept. 22, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,068. Locking Redundant Link. Filed Mar. 7, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,184. Sun Tracking Solar Energy Collector. Filed Apr. 6, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,718. Thermocouples of Molybdenum and Iridium Alloys for More Stable Vacuum-High Temperature Performance. Filed Nov. 21, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,729. Inhibited Solid Propellant Composition Containing Beryllium Hydride. Filed Aug. 5, 1969. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,775. Multilevel Metallization Method for Fabricating a Metal Oxide Semiconductor Device. Filed July 8, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,111,851. Electrically Conductive Thermal Control Coatings. Filed Oct. 21, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,112,357. Lightning Current Detector. Filed Sept. 22, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,112,497. Digital Demodulator-Correlator. Filed Mar. 29, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,122,725. Length Mode Piezoelectric Ultrasonic Transducer for Inspection of Solid Objects. Filed June 16, 1976. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,128,814. External Bulb Variable Volume Maser. Filed Nov. 30, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,129,857. Partial Polarizer Filter. Filed Aug. 11, 1977. Patented Dec. 12, 1978. Not available NTIS.

Patent 4,130,032. High-Torque Open-End Wrench. Filed Aug. 29, 1977. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,130,112. Coupling Apparatus for Ultrasonic Medical Diagnostic System. Filed Nov. 15, 1976. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,130,471. Microelectrophoretic Apparatus and Process. Filed Nov. 10, 1977. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,130,795. Versatile LDV Burst Simulator. Filed Dec. 16, 1977. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,131,336. Primary Reflector for Solar Energy Collection Systems. Filed May 15, 1978. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,459. High Temperature Resistant Cermet and Ceramic Compositions. Filed Dec. 8, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,486. Back Wall Solar Cell. Filed Apr. 24, 1978. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,132,069. Integrated Gas Turbine Engine-Nacelle. Filed Dec. 22, 1976. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,130. Safety Flywheel. Filed Jan. 17, 1977. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,594. Gas Diffusion Liquid Storage Bag and Method of Use for Storing Blood. Filed June 28, 1976. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,599. Determination of Antimicrobial Susceptibilities on Infected Urines Without Isolation. Filed Apr. 23, 1976. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,829. Preparation of Dielectric Coating of Variable Dielectric Constant by Plasma Polymerization. Filed Feb. 11, 1977. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,940. Apparatus for Providing a Servo Drive Signal in a High-Speed Stepping Interferometer. Filed June 6, 1977. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,132,989. Azimuth Correlator for Real-Time Synthetic Aperture Radar Image Processing. Filed Oct. 18, 1977. Patented Jan. 2, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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	St. Louis Public Library	(314) 241-2288 Ext. 214
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 21, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-11-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines: Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-2-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-6-78
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-20-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-1-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	2-3-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-1-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-25-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-11-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-7-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-30-78
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	12-20-77

Expiration of patents: The patents within the range of numbers indicated below expire during April 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,027,558 to 3,031,668, inclusive
Plant Patents..... Numbers 2,135 to 2,142, inclusive

REISSUES

JUNE 12, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

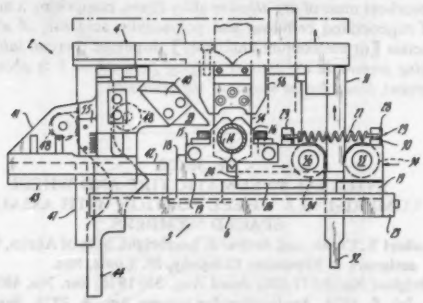
Re. 30,025
UNIVERSAL DOUBLE CUT DIE SET

Alexander Borzym, Dearborn, Mich., assignor to Alpha Industries, Inc., Detroit, Mich.

Original No. 4,036,091, dated Jul. 19, 1977, Ser. No. 695,242, Jun. 11, 1976. Application for reissue Jul. 3, 1978, Ser. No. 921,364

Int. Cl.[2] B26D *5/22*; B23D *25/06*

U.S. Cl. 83—319 **4 Claims**



1. A cutoff die set operable in various mechanical press arrangements for severing elongate workpieces comprising, in combination, a lower die shoe, an upper die shoe, guide post means fixed to the shoes and interconnecting the shoes for guided relative reciprocation to effect the cutoff, and tube cutting means operated by the relative reciprocation, the guide post means consisting of three guide post bushings and three guide posts, each post being slidable in one of the bushings; the first and second of the posts having parallel axes lying spaced apart in a first plane parallel to the direction of the said reciprocation and the third post and one of the first and second posts having parallel axes lying spaced apart in a second plane parallel to the direction of the said reciprocation and approximately perpendicular to the said first plane, so that the die set is tolerant of side thrusts of various orientation exerted by a ram operating the die; the die set including clamping jaw means mounted on one of the shoes for holding a workpiece during the cutoff operation, the clamping jaw means comprising a first carriage slidably mounted on one of the shoes for movement transverse to the direction of relative reciprocation of the shoes and comprising a second carriage slidably mounted on the first carriage for movement opposite to that of the first carriage; and means operated by relative reciprocation of the shoes to move the said carriages.

Re. 30,026
VEHICLE CONVEYOR

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201, and James S. Richardson, Arleta, Calif., assignors to Daniel C. Hanna, Portland, Oreg.

Original No. 3,554,132, dated Jan. 12, 1971, Ser. No. 639,861, May 19, 1967. Application for reissue Jul. 18, 1977, Ser. No. 816,505

Int. Cl.[2] B65G *19/22*

U.S. Cl. 104—172 B **3 Claims**

12. Conveyor apparatus for transporting a vehicle including a conveyor and at least one member carried by said conveyor and adapted to engage said vehicle for moving said vehicle:

said member normally following a path along said conveyor which is noncoincident with said vehicle;

control means for selectively positioning said member into an engagement path with said vehicle along said conveyor;

a slotted closure between the path of said vehicle and the normal path of said member;

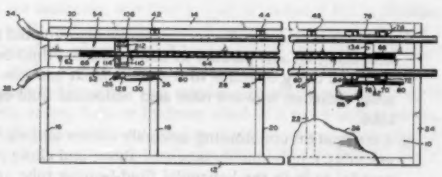
said control means being effective to urge at least a portion of said member past said closure into an engagement path with said vehicle, at least a portion of said member then extending through the slot in the closure;

said slotted closure comprising a horizontal track along the top of which a tire of said vehicle is adapted to travel in the direction of the slot therein;

said conveyor being disposed below said track and along said slot;

said member including a roller means and an arm hingedly connecting said roller means to said conveyor wherein said arm is adapted to pass through the slot in the track;

the slot in said track having an enlarged portion through which said roller means may be urged;



said control means comprising lifter means for raising said roller means through said enlarged portion and onto the upper surface of said track;

said arm being provided with an additional roller positioned on said arm between the first-mentioned roller means and said conveyor for engaging the under surface of said track as said first-mentioned roller means engages a vehicle tire;

said first-mentioned roller means being formed in two parts, one on either side of said arm, for travel upon the upper surface of said track on either side of said slot, each part of said first-mentioned roller means including rollers for bearing on the track and smaller diameter rollers for bearing on said vehicle tire;

wherein said additional roller is also formed in two parts with one part carried on each side of said conveyor, said first-mentioned roller means having a total longitudinal dimension longer than said additional roller; and

said track bearing rollers being engageable by said lifter means at longitudinal portions of said track bearing rollers beyond the longitudinal extent of said additional roller.

Re. 30,027
SOLAR RADIATION COLLECTOR AND CONCENTRATOR

Vernon J. Hockman, Oak Ridge, Tenn., assignor to Oak Ridge Solar Engineering, Inc., Oak Ridge, Tenn.

Original No. 3,964,464, dated Jun. 22, 1976, Ser. No. 566,104, Apr. 8, 1975. Application for reissue Jun. 21, 1977, Ser. No. 808,650

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **11 Claims**

1. A solar radiation collector and concentrator comprising:

a. an enclosure assembly formed from weatherproof metal and defining a generally rectangular mounting surface;

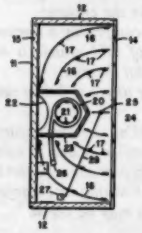
b. a transparent cover portion for said enclosure assembly;

c. a longitudinal plurality of aligned curved reflective surfaces supported within said mounting surface and being operable to reflect incident solar radiation toward a com-

mon focal axis extending longitudinally of said enclosure assembly;

d. multiple vertical reflectors positioned perpendicular to said plurality of longitudinal aligned curved reflective surfaces and being operable to reflect low-angle solar radiation toward said common focal axis;

e. a helicoidal fluid-bearing tube longitudinally mounted within said enclosure assembly and being positioned at the common focal axis of solar radiation reflected from said longitudinal plurality of aligned curved reflective surfaces and at the common focal axis of low-angle solar radiation reflected from said multiple vertical reflectors;



f. a convex radiation reflector longitudinally mounted below and along an axis parallel to said helicoidal fluid-bearing tube and being operable to reflect incident and low-angle solar radiation upward onto said helicoidal fluid-bearing tube;

g. a transparent coil housing assembly within said enclosure assembly longitudinally mounted above and along an axis parallel to both the helicoidal fluid-bearing tube and the convex radiation reflector; and

h. means for preventing excess solar radiation from striking said transparent coil housing assembly.

Re. 30,028

HEART PACER

David L. Purdy, Indiana; George J. Magovern, Pittsburgh, both of Pa., and Nicholas P. D. Smyth, Washington, D.C., assignors to Coratomic, Inc., Indiana, Pa.

Original No. 3,987,799, dated Oct. 26, 1976, Ser. No. 550,071, Feb. 14, 1975. Continuation-in-part of Ser. No. 378,636, Jul. 12, 1973, Pat. No. 3,866,616. Application for reissue Jan. 13, 1977, Ser. No. 758,928

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 P **7 Claims**

6. A heart pacer to be implanted in a body by being seated between the skin and other tissue of said body, said heart pacer including a container having therein power-supply means and means for deriving pulsations for the heart from said power-supply means, said container having a head through which a catheter is to be connected to the heart extends, said head being encased in a casing forming a part of said container, said container having an outer surface which, except for said head and casing, is curved in all dimensions and the transition from each dimension to others is smooth, such that the container is free of corners and sharp ends, so that when said heart pacer is implanted, it is neatly seated between said other tissue and said skin, the depth of said container being small compared to the length or the width of said container, the said depth being the largest distance between the wall of the container, which is to engage the skin of the host on implantation, and the opposite wall of said container.

Re. 30,029

ABSORBENT MASS OF ALLOY FIBERS OF REGENERATED CELLULOSE AND POLYACRYLIC ACID SALT OF ALKALI-METALS OR AMMONIUM

Frederick R. Smith, Wilmington, Del., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Original No. 3,844,287, dated Oct. 29, 1974, Ser. No. 259,944, Jun. 5, 1972. Application for reissue Aug. 27, 1975, Ser. No. 608,304

Int. Cl.[2] A61F *13/20*

U.S. Cl. 128—285 **10 Claims**

1. An article of manufacture comprising a highly fluid absorbent mass of *dry alkaline* alloy fibers, comprising a matrix of regenerated cellulose and polyacrylic acid salt of alkali-metals [or ammonium uniformly] dispersed therein, *said salt being present in an amount ranging from about 5 to about 35 percent, based on the weight of the cellulose.*

Re. 30,030

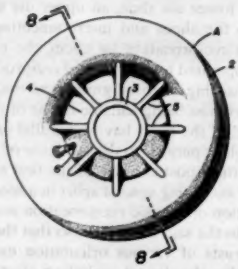
INTEGRAL PNEUMATIC TIRE AND WHEEL COMPRISING A WHEEL PORTION WITH AXIALLY SPACED MEMBERS

Aubert Y. Coran, and Arthur J. Lambright, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Original No. 3,977,454, dated Aug. 31, 1976, Ser. No. 485,808, Jul. 5, 1974. Application for reissue Apr. 6, 1978, Ser. No. 893,885

Int. Cl.[2] B60C *7/00*

U.S. Cl. 152—323 **17 Claims**



1. An integral tire and wheel unit, composed entirely of a homogeneous moldable elastic material, comprising [a] *an inflatable* tire portion, a wheel portion and a hub, said tire portion comprising a substantially enclosed chamber, said wheel portion comprising a plurality of support members connecting the hub and tire portion, said tire and wheel portions being integrally molded to provide interfacial integrity therebetween each portion being homogeneous throughout and in which at least one of said support members is spaced axially from the midplane *and contains one or more ribs connecting both the tire and wheel portions* to impart substantial rigidity and lateral stability to the wheel portion.

Re. 30,031

SHEET STACK JOGGING MECHANISM

Donald L. Snellman, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.

Original No. 3,658,324, dated Apr. 25, 1972, Ser. No. 34,368, May 4, 1970. Application for reissue Jan. 9, 1976, Ser. No. 647,729

Int. Cl.[2] B65H *31/38, 31/24*

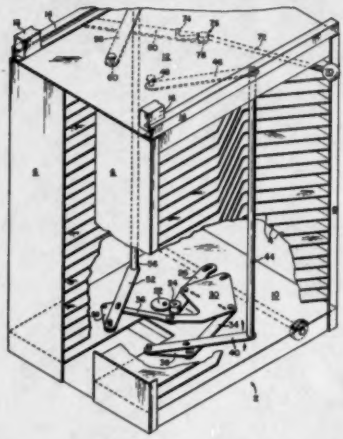
U.S. Cl. 271—222 **20 Claims**

1. In combination with a sheet receiving [shelf] *bin com-*

prising a column of shelves with each shelf adapted to receive a plurality of sheets and form *a* uniform [stacks therefrom] *stack thereon*, a sheet stack jogging means comprising;

backup means mounted on the side of the [shelf] *bin* against which the stacks may be aligned,

a jogging apparatus *including at least one* bar, *said bar being adjustable in distance from the backup means to accommodate sheets of different widths and being* mounted for movement to and from the [shelf] *bin* at a first position on the opposite side of the [shelf] *bin* from the backup means, said [jogging apparatus] *bar* movable [from] *between* the first position whereat it periodically jogs the sheets



and a second position whereat it is substantially removed from the side of the [shelf] *bin* allowing easy access to the [stack] *stacks*, and

linking means connecting said bar to an eccentrically mounted, motor driven wheel whereby the bar is periodically moved, when in its first position, to and from the [shelf] *bin* moving the sheets into contact with the backup means assuring [an] even [stack.] *stacks, said linking means including adjusting means operatively associated with said bar for varying the distance between the bar and said backup means for accommodating sheets of various widths.*

Re. 30,032

CARBOFUNCTIONAL SULFUR AND CARBOXYLATE BRIDGED TIN COMPOUNDS

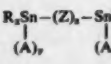
Thomas G. Kugele, and Arthur F. Koeniger, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Original No. 3,979,359, dated Sep. 7, 1976, Ser. No. 524,271, Nov. 15, 1974. Application for reissue Sep. 7, 1978, Ser. No. 940,450

Int. Cl.[2] **C08J** *3/20;* **C07F** *7/22*

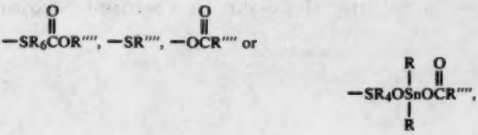
U.S. Cl. 260—45.75 S **55 Claims**

1. A sulfur containing organotin compound having the formula (1):

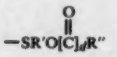


where R is a monovalent alkyl radical of 1 to 8 carbon atoms, A is

halogen of atomic weight 35 to 127.

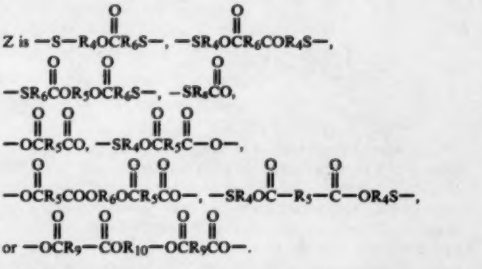


the A groups are the same or different with the proviso that at least one

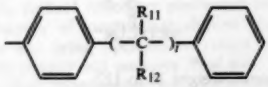


is in the molecule, d is 0 or 1, each R′ when d is 0 is alkylene of 1 to 10 carbon atoms, each R′ when d is 1 is alkylene of 2 to 10 carbon atoms, each R″ *when d is 1* is [hydrogen,] alkyl of 1 to 20 carbon atoms, ethylenically unsaturated aliphatic hydrocarbyl having 1 to 3 ethylenic double bonds and 2 to 19 carbon atoms, halo or hydroxy alkyl of 2 to 19 carbon atoms, halo or hydroxy alkenyl of 2 to 19 *carbon atoms*, cycloalkyl of 5 to 6 carbon atoms, benzyl, phenyl, alkylphenyl, halophenyl,

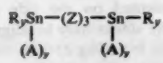
where R‴ is alkylene of 2 to 10 carbon atoms, *each R″ when d is 0 is hydrogen, alkyl of 1 to 20 carbon atoms, ethylenically unsaturaed aliphatic hydrocarbyl having 1 to 3 ethylenic double bonds and 2 to 19 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, benzyl, phenyl or halophenyl,* R⁗ is alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 18 carbon atoms, halo or hydroxy alkyl of 2 to 20 carbon atoms, halo or hydroxy alkenyl of 2 to 20 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, benzyl, phenyl or halophenyl, x is 1 or 2, y is 1 or 2 and z is 1 or 2, the total of x+y+z is 4,



where R_4 is arylene, —CH=CH—, alkylene of 2 to 10 carbon atoms, R_5 is nothing, alkylene of 1 to 8 carbon atoms, phenylene or —CH=CH—, R_6 is alkylene of 1 to 10 carbon atoms, —CH=CH— or arylene, R_9 is a residue of a dicarboxylic acid from which the two carboxyl groups have been removed, R_{10} is arylene or



where t is 0 to 1
and R_{11} and R_{12} are H or alkyl, or (2) an overbased compound prepared by reacting a dialkyltin oxide of alkystannoic acid with a compound of the formula:



54. A halogen-containing polymer composition containing a compound according to claim 1 in an amount effective to heat stabilize the polymer.

PLANT PATENTS

GRANTED JUNE 12, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,424

TAYBERRY

Derek L. Jennings, Dundee, Scotland, assignor to National Seed Development Organisation Limited, Cambridge, England

Filed Jan. 31, 1978, Ser. No. 874,011

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct variety of hybrid Rubus substantially as herein shown and described.

4,425

PEPEROMIA PLANT (AUTUMN LEAF)

Virginia Bradford, P.O. Box 1547, Winter Garden, Fla. 32787

Filed Mar. 9, 1978, Ser. No. 885,108

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinctive variety of Peperomia plant substantially as herein shown and described, characterized by a variegated leaf mottled with dark and light green.

4,426

ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed Apr. 28, 1978, Ser. No. 901,285

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, essentially as illustrated and described, characterized by buds and flowers of a basic white or near white color with the upper petal surfaces shaded, blended or tinted with light to deep pink color of varying hue and intensity, ranging from very soft shades of Neyron Rose to deeper shades of rose pink to lavenderish pink, depending upon conditions of culture and intensity of direct sunlight; the form and size of bud and flower resembling Easter Morning; and further characterized by a plant which is vigorous and relatively compact, said plant being easy to propagate from cuttings, with medium small, disease resistant matt foliage, an abundance of bloom with excellent keeping qualities, with flowers borne singly or several to the stem in loose clusters.

4,427

IMPATIENS PLANT — MOHAWK

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Jul. 3, 1978, Ser. No. 921,998

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Mohawk, and particularly characterized by slightly reddened foliage under high light, very floriferous, a medium size red-purple flower, and no variegation of foliage.

4,428

LILY NAMED GOLD NUGGET

Ted T. Kirsch, Sitkum Rt. Box 142, Myrtle Point, Oreg. 97458

Filed Jul. 20, 1978, Ser. No. 926,911

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Asiatic Hybrid lily plant substantially as herein shown and described characterized by the color, form and arrangement of its bright yellow flowers, by its profuse production of flower buds which bloom progressively to provide an extended blooming period, and by the long lasting quality of the blooms on the plant and as cut flowers.

PLANT PATENTS

GRANTED JUNE 12, 1979

PATENTS

GRANTED JUN. 12, 1979

ERRATA

For CLASS	See PATENT NO.
409–099	4,157,679
414–304	4,157,761
406–031	4,157,796
297–482	4,157,841
406–182	4,157,848
264–553	4,157,885
546–015	4,158,005
568–567	4,158,021
568–571	4,158,022
585–467	4,158,024
585–321	4,158,025
585–321	4,158,026
521–057	4,158,031
423–104	4,158,065
428–500	4,158,092

PATENTS

GRANTED JUN. 12, 1979

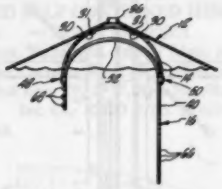
ERRATA

PATENTS

GRANTED JUNE 12, 1979

GENERAL AND MECHANICAL

4,157,592
ADJUSTABLE SUN HAT
Karnig Hovhannessian, 5154 Romaine St., Los Angeles, Calif. 90029
Continuation-in-part of Ser. No. 631,533, Nov. 13, 1975, Pat. No. 4,057,855. This application Nov. 14, 1977, Ser. No. 851,157
Int. Cl.[2] A42B *1/18, 1/20*
U.S. Cl. 2—177 **5 Claims**

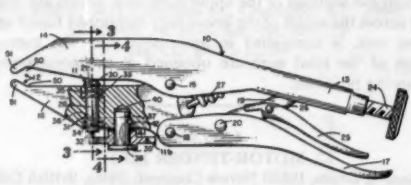


4. An adjustable sun hat comprising a head and chin band assembly including a first band portion adapted to extend about the wearer's chin and a second band portion adapted to extend over the upper portion of the wearer's head; a support band pivotally secured to said head and chin band assembly for movement of said support band about a first axis, a body portion slidably mounted on said support band for rotational movement of said body portion about a second axis, said second axis being substantially perpendicular to said axis whereby said body portion of said hat can be positioned in any desired angular orientation on the wearer's head to block the sun's rays.

4,157,593
PATIENT LIFT AND TRANSPORT APPARATUS
Nils L. O. Kristensson, Stockholm, Sweden, assignor to Landstingens inkopscentral LIC, Ekonomisk forening, Solna, Sweden
Filed Oct. 28, 1977, Ser. No. 846,345
Claims priority, application Sweden, Nov. 1, 1976, 7612118
Int. Cl.[2] A61G *7/08*
U.S. Cl. 5—81 R **14 Claims**

1. A mobile patient lift and transport apparatus for lifting a patient from a sitting and leaning-forward position on a chair or bed and suspending the patient during transport, said apparatus comprising a frame having at least three floor-engaging wheels and a raisable and lowerable unit, power means carried by said frame for adjustably raising and lowering said unit, a knee support carried by said unit in a position to engage the knees of a patient when in a sitting position, retaining means for holding a patient in a sitting and leaning-forward position with his knees pressed against said knee support, said retaining means including a U-shaped belt having a handle at each end and extending obliquely at an angle of 30° to 60° to the horizontal and upwardly and forwardly with respect to the patient so that the center portion of the belt is capable of passing over the neck of the patient's femurs, and means on said unit for removably attaching the belt at locations near its ends to said unit whereby a patient can be raised and lowered by raising and lowering said unit.

4,157,594
ROLLER CHAIN PLIER
Vern J. Raabe, 13819 NE. 73 Pl., Redmond, Wash. 98052
Filed Feb. 21, 1978, Ser. No. 879,068
Int. Cl.[2] B25B *7/22*
U.S. Cl. 7—125 **7 Claims**



1. A roller chain chucking and link pin removing tool comprising, in combination:

a compound plier having an elongate unitary upper jaw and upper handle pivotably communicating with the upper medial part of a lower jaw having a pivotably joined lower handle, the pivotal joinder of the lower jaw and lower handle being at a spaced distance from the pivotal joinder of the jaws with each other, and means of adjustably regulating the distance between plier jaws when closed;

a link pin extractor having an elongate extractor cylinder movably carried, in a hole defined in the medial part of the lower jaw, for limited sliding motion in a plane parallel to that of the plier motion and movably responsive to motion of the upper plier jaw with

an extractor pin carried in the outer end of the pin extractor most distal from the upper plier jaw;

means of biasing the link pin extractor to an inward position toward the upper lier jaw; and

means of releasably maintaining the link pin extractor within the lower plier jaw;

an anvil having at least one chain roller hole to receive and support the roller and associated links of a roller chain, the anvil

being carried by an anvil mounting pin, releasably carried by the lower plier jaw, at a spaced distance from the pin extractor so that the chain roller holes are positionable with centers immediately under the pin extractor when that pin extractor be in relaxed biased position; and

a chain chucker in the outer end parts of the plier jaws, having indentations at similar opposed positions in the facing sides of the jaws to receive rollers at the end parts of a roller chain to be connected and force spaced links between the rollers into adjacency to allow their interconnection by a link pin responsive to plier motion.

4,157,595

PROCESS FOR THE UNIFORM DYEING OF TEXTILE MATERIAL WEBS WITH THE AID OF A UNIFORM APPLICATION OF LIQUOR

Hans-Ulrich von der Eltz, Frankfurt am Main, and Siegfried Glander, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,898

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655973

Int. Cl.[2] D06B *23/26*

U.S. Cl. 8—151 16 Claims

1. A process for the uniform application of treatment liquors to textile material webs in the continuous dyeing or finishing of fibre materials, with the aid of a measurement of the total moisture content applied to the textile material, wherein, in the course of the material run, immediately behind a machine for applying the liquor to the continuously fed material, several measuring positions are arranged transversely to the transport direction of the material and measurements of the total moisture are made at these positions on the textile material by means of a contactless method, the measuring pulses determined in this manner are transmitted with low inertia to the control elements of the preceding liquor application unit and there the amount of liquor pick-up from several separately controllable sections of the application unit, which are distributed across the width of the previously mentioned liquor application unit, is controlled in agreement with the measured values of the total moisture obtained at the corresponding measuring positions.

4,157,596

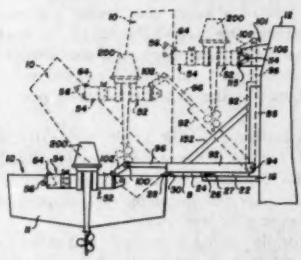
MOTOR-TENDER LIFT

Thomas A. Green, 10880 Norum Crescent, Delta, British Columbia, Canada (V4C 3H7)

Filed Feb. 10, 1978, Ser. No. 876,621

Int. Cl.[2] B63B *23/02*

U.S. Cl. 9—34 13 Claims



1. An apparatus for simultaneously moving an outboard motor and small boat between a storage position generally against a mother vessel and an operational position floating generally adjacent the mother vessel, the apparatus comprising:

a mount for the outboard motor;

first connecting means for pivotally connecting the mount to the small boat;

lifting arm means having a proximal end and a distal end and pivotally connectable to the mother vessel near the proximal end;

second connecting means near the distal end of the lifting arm means for pivotally connecting the lifting arm means to the mount; and;

lifting means for lifting the lifting arm means from a lowered position to a raised position and for lifting the mount from the operational position to the storage position when the mount is connected to the lifting arm.

4,157,597

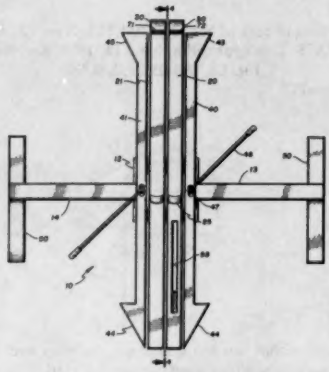
OPERATOR PROPELLED WATER SKIS

Ralph J. Trebnick, 316 N. 7th Ave., Bovey, Minn. 55709

Filed Feb. 13, 1978, Ser. No. 876,996

Int. Cl.[2] A63C *15/04*

U.S. Cl. 9—310 D 11 Claims



1. Operator propelled water skis comprising: a pair of elongated float type ski members with operator foot supports included thereon for propelling said ski members, a thwart type frame for mounting said ski members, said frame having a channeled shaped support section at the center thereof and outwardly extending stabilizer means, a pair of ski pole floats, means included on the ski pole floats being adapted to couple pole means to enable an operator to move the ski pole floats, said ski pole floats and said ski members being positioned in said channel shaped support section of said frame in a side-by-side relationship with one of said ski members being secured to said frame and the other of said ski members and said ski pole floats being movable relative thereto, and means included on at least the ski members adapted to increase resistance to movement of the ski members in one direction of the movement of the ski members when the skis are positioned in water and to reduce resistance to movement of the ski members in the opposite direction of the movement of the ski members.

4,157,598

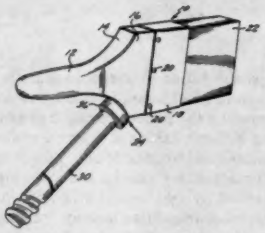
PAINT BRUSH HAVING DETACHABLE EXTENSION ROD

Charles H. Talent, and Carol S. Talent, both of 1204½ Freeman Ave., Long Beach, Calif. 90804

Filed Apr. 27, 1978, Ser. No. 901,013

Int. Cl.[2] A46B *7/02*; B25G *1/04, 3/30*

U.S. Cl. 15—145 7 Claims



1. A paint brush adapted for remote manipulation comprising an axial handle integral with and terminating in an oblong stock, bristles attached to said stock and extending in a direction opposite to said handle, and an adaptor for receiving an extension rod mounted in said stock and laterally surrounded

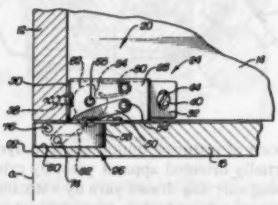
by the structure of said stock and located proximate to said handle and at an angle relative thereto, and in co-planar arrangement with said handle and said stock, wherein said adapter is a plug of cylindrical cross-section internally tapped at a diameter at about 11/16 inches and with a thread pitch at about 3/16 inches and force fitted into a well drilled into said stock and having a section at its outermost extremity external to said stock radially reinforced by a circular band positioned thereabout.

4,157,599

WIDE-ANGLED SELF CONTAINED HINGE FOR PANEL DOOR CABINET

Frank A. Holmes, Ballasalla, Isle of Man, assignor to Jaybee Manufacturing Corporation, Los Angeles, Calif.

Filed Dec. 19, 1977, Ser. No. 861,850
Int. Cl.[2] E05D *3/06, 11/10*
U.S. Cl. 16—163 **1 Claim**



1. For use with a cabinet door and a frame having vertical and horizontal frame elements forming a substantially rectangular opening at which the cabinet door is mounted:

(a) a pair of hinges, each hinge having a cabinet leaf and a door leaf;

(b) each cabinet hinge leaf including an elongaged case squared to nest in and fit the corresponding corner of the frame opening with the long dimension of the case extending horizontally along and in contact with the corresponding horizontal frame element;

(c) each case having attachment ears, one of the ears being located along the horizontal frame element beyond the case and the other of the ears being located along the vertical frame element beyond the case whereby fasteners at the ears cause the case to brace the frame elements of the cabinet;

(d) a pair of quadrilateral links for each hinge, said links being pivotally mounted at first ends by the corresponding case to project forwardly of the case;

(e) the door leaf of each hinge having a case attached at a slot extending along the back of the door from the pivoted door edge, each door leaf case pivotally mounting the second ends of the corresponding quadrilateral links.

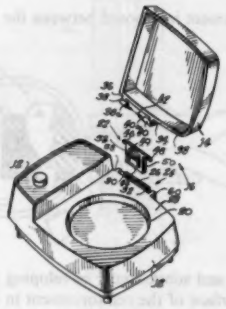
4,157,600

HINGE ASSEMBLY

Michael D. Thomas, Arab, Ala., assignor to Ryder International Corporation, Barrington, Ill.

Filed May 1, 1978, Ser. No. 902,290
Int. Cl.[2] E05D *5/12, 11/06*
U.S. Cl. 16—169 **9 Claims**

1. A hinge assembly for pivotally joining a cover member or the like to a base member, said hinge assembly comprising: pintle means on said cover member, a locking member including a first portion defining a segment of a hinge knuckle and a second portion defining locking tab means, receptacle means in said base member including a first portion defining a segment of a hinge knuckle and a second portion defining locking slot means, said locking tab means being engageable with said locking slot means for holding said first portion of said locking member in alignment with said first portion of said base member to define a hinge knuckle surroundingly and pivotally engaging said pintle means of said cover member.

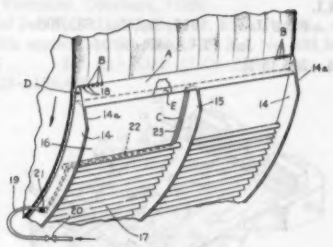


4,157,601

FRONT SCREEN FOR CARDING MACHINES

Olin S. Elliott, 2011 Cleveland St., Greenville, S.C. 29607

Filed Feb. 24, 1978, Ser. No. 880,771
Int. Cl.[2] D01G *15/34*
U.S. Cl. 19—95 **5 Claims**



1. A front screen for a carding machine having a cylinder and doffer carried between side frame members comprising:

a nose portion extending forwardly from beneath the cylinder between the cylinder and the doffer and within the side frame members;

orifice means in the marginal portions of the nose portion extending adjacent a forward end of the nose portion; and

means connecting a source of compressed air to said orifice means directing air forwardly therefrom for avoiding collection of fibers on the nose of the screen adjacent marginal portions of a web but at sufficiently low pressure as to avoid damage to the web.

4,157,602

LOCKING CABLE

Phillip E. Pennell, Lakewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

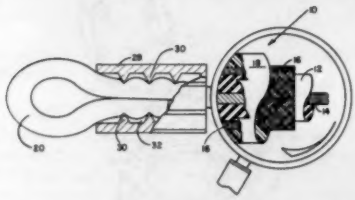
Division of Ser. No. 371,313, Jun. 18, 1973, Pat. No. 3,991,445. This application Jul. 24, 1975, Ser. No. 598,959
Int. Cl.[2] F16G *11/02;* **E05B** *73/00*
U.S. Cl. 24—73 A **1 Claim**

1. A flexible locking cable comprising in combination:

an inner elongated solid flexible body extending along the length of the locking cable made of (1) a pre-cured rod-like elastomeric member and (2) a metal cable member substantially axially and fixedly embedded in the rod-like elastomeric member;

an outer cover made of a heat setting thermo-plastic polymeric foam material having elastomeric properties and disposed outwardly of and extending around the inner body;

metal reinforcement interposed between the inner body and



outer cover and substantially enveloping the inner body, the outer surface of the reinforcement in intimate engaging contact with the outer cover; and

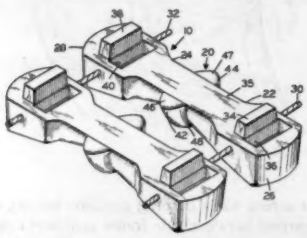
means carried by the ends of the locking cable for receiving detachable locking means for joining the ends of the locking cable together.

4,157,603

FASTENING ELEMENT TRAIN AND METHOD AND APPARATUS OF MANUFACTURE

John A. Kowalski, Erie, Pa., assignor to Textron Inc., Providence, R.I.

Filed Jun. 4, 1975, Ser. No. 583,700
Int. Cl.[2] A44B *19/04*
U.S. Cl. 24—205.13 R **5 Claims**



1. A fastener element train comprising

a pair of parallel filaments,

a plurality of fastening elements spaced along the pair of parallel filaments,

each of said plurality of fastening elements having a head portion and a pair of leg portions extending from the head portion,

each of said pair of leg portions having a respective one of the pair of filaments embedded therein,

one of each pair of leg portions having an opening therein on a surface of said leg portions which is parallel to said filaments,

the other of each pair of leg portions having a projection on the same surface as said opening for mating with the opening to interlock the leg portions of each pair of legs portions,

each one leg portion having a projection contiguous its opening and extending above the surface,

each other leg portion having an opening contiguous with its projection, and

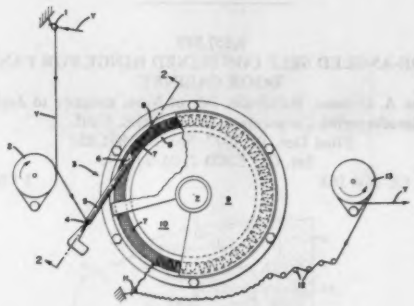
said projection and opening in each one leg portion capable of mating with the opening and projection of the respective other leg portion.

4,157,604

METHOD OF HIGH SPEED YARN TEXTURING

Hendrikus J. Oswald, Morristown; Hsin L. Li, Parsippany; Russell H. Butler, Rockaway, and Alfred L. Liland, Lake Shawnee, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 18, 1977, Ser. No. 853,006
Int. Cl.[2] D02G *1/12*
U.S. Cl. 28—221 **5 Claims**



1. In a process of texturing multifilament polyethylene terephthalate partially oriented apparel yarn, by crimping operations comprising carrying drawn yarn by a stream of hot steam through an energy tube at high linear velocity to strike first, at an oblique angle, an unyielding barrier within a covered chamber which includes a perforate moving confining surface; allowing the compressible fluid to escape through the perforations in the moving surface; conveying the yarn toward the outlet from the chamber on said surface, traveling at lower linear velocity than that of the incoming yarn, whereby the yarn collects in a plug downstream from the point of impingement of the yarn with the barrier; and removing the yarn from the chamber when the plug reaches the outlet from the chamber:

the improvement which comprises, in combination, drawing said yarn in steam, heated to temperature in the range from 235° C. to 300° C., at draw ratio in the range from 1.65 to 2.0; heat-setting the yarn in drawn state, by contact between the yarn and such heated steam using at least sufficient total heat and residence time to bring the density of the resulting heat-set yarn to at least 1.378 g./ml., followed by heating the yarn at constant length — in advance of subjecting it to the above recited crimping operations — by passing the yarn around a heated roll at contact time of about 0.1 second, said roll being heated to temperature of about 145° to 165° C.; and supplying the resulting hot, dimensionally stabilized yarn directly, without winding up, at linear velocity of at least 2500 meters per minute, into the energy tube for the above crimping operations.

4,157,605

FLUID JET TEXTURING APPARATUS

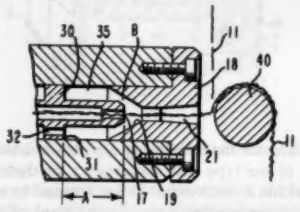
Brian M. Agers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 598,734, Jul. 24, 1975, abandoned. This application May 20, 1976, Ser. No. 688,248
Int. Cl.[2] D02G *1/16*
U.S. Cl. 28—254 **7 Claims**

1. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore between said ends, a venturi located in said bore at said outlet end, and a yarn guiding element sealing off said bore at the yarn inlet end of the body, said element having a passage

therethrough for guiding yarn from the yarn inlet of the body past the gas inlet through the exit end of said element to the venturi, said element having a cylindrical portion thereon approximating the diameter of said bore, said portion extending beyond said gas inlet and terminating in a surface facing and spaced from said venturi, there being an orifice in said portion in communication with said gas inlet and existing at said surface for directing pressurized gas from said gas inlet into said venturi, the improvement comprising: said surface being located a distance of from 0.375 inch to about 0.65 inch from the exit end of said element; and a baffle located adjacent the yarn outlet end of the jet.

7. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore between said ends, a venturi located in said bore at said outlet



end, and a yarn guiding element sealing off said bore at the yarn inlet end of the body, said element having a passage therethrough for guiding yarn from the yarn inlet of the body past the gas inlet through the exit end of said element to the venturi, said element having a cylindrical portion thereon approximating the diameter of said bore, said portion extending beyond said gas inlet and terminating in a surface facing and spaced from said venturi, there being an orifice in said portion in communication with said gas inlet and exiting at said surface for directing pressurized gas from said gas inlet into said venturi, the improvement comprising: said surface being located a distance of from 0.375 inch to about 0.65 inch from the exit end of said element; and a cylindrical baffle located adjacent the yarn outlet end of the jet, said baffle having a longitudinal axis perpendicular to and approximately intersecting the axis of said venturi, the closest distance from the yarn outlet to the baffle being in the range of from 0.05 to 0.15 inch.

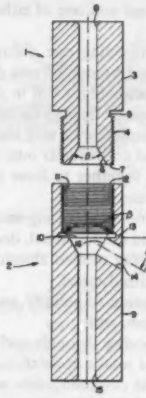
4,157,606

YARN TANGLING DEVICE

Harold F. Loew, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 9, 1977, Ser. No. 831,990
Int. Cl.[2] D02G 1/16
U.S. Cl. 28—271 **19 Claims**

1. A yarn tangler arrangement for processing multifilament yarn, the arrangement comprising the first member having a body portion and a coupling portion, a longitudinally extending bore means extending through said body portion and said coupling portion for accommodating a length of processed yarn, a chamfered portion provided at an end of said bore means arranged in the coupling portion, a second member having a body portion and a coupling portion, said coupling portion of said second member being configured so as to cooperate with said coupling portion of said first member thereby fixedly coupling said first and second members, a further longitudinally extending bore means arranged in said second member for accommodating a length of yarn to be processed, said further bore means terminating in a chamfered portion, said chamfered portions of said bore means and said further bore means defining a chamber for accommodating yarn when said first and second members are fixedly coupled, and an air inlet supply means provided in one of said first and second members



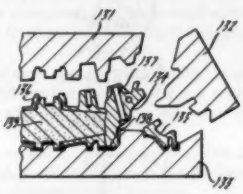
for supplying a quantity of compressed air to the chamber so as to aspirate yarn into the yarn tangler arrangement.

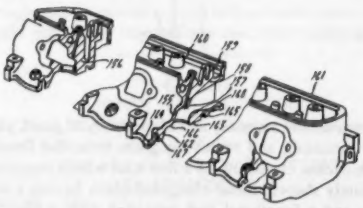
4,157,607

METHOD OF MANUFACTURING AN INTERNAL COMBUSTION ENGINE CYLINDER HEAD

Robert P. Ernest, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 753,347, Dec. 22, 1976, Pat. No. 4,136,648. This application Sep. 22, 1977, Ser. No. 835,948
Int. Cl.[2] B23P 15/00, 13/00
U.S. Cl. 29—156.4 R **3 Claims**





1. A method of making a head for an internal combustion engine by injecting molten aluminum into a molding assembly, the molten aluminum being withdrawn from a reservoir located beneath the molding assembly, comprising:

(a) preparing and providing three dies of generally equal length adapted to form said molding assembly except for a plurality of intake ports, the dies each having molding faces such that when brought together a closed hollow configuration is formed into which said molten aluminum is injected, said configuration defining cast walls for head sides, top and bottom, for a galley of cylinder roofs and a

series of exhaust passages, and for thin continuous water passage grooves extending sequentially along one side of each of said cylinder roofs, each die defining part of the side wall of the head and one of either the bottom or top wall,

(b) preparing and providing one disintegratable sand core cluster to be carried by one of said dies and to be enveloped by said die assembly when in the closed condition, said core cluster being effective to define a series of intake passages upon completion of said method,

(c) inserting said sand core cluster into said carrying die and bringing said dies together to form a molding cavity devoid of separate inserts,

(d) by way of a tube communicating said molding cavity and a lower zone of said molten metal, decreasing the pressure in said cavity causing molten aluminum to rise into said cavity free of oxidized metal,

(e) allowing said casting to solidify and stripping said dies and cores therefrom, and

(f) drilling central boring through said head above and between each of said intake and exhaust passages, said drilling being placed in communcation with said grooving by way of a passage defined by said dies.

4,157,608

FIXTURE FOR SPECIAL GEARS, PARTICULARLY OF BICYCLES

Tullio Campagnolo, Corso Padova, 168, 36100 Vicenza, Italy

Filed Dec. 27, 1977, Ser. No. 864,935

Claims priority, application Italy, Dec. 27, 1976, 30888 A/76

Int. Cl.[2] B23P *19/04*

U.S. Cl. 29—240 **3 Claims**

1. Fixture for the assembly and disassembly of gears, particularly for mounting and removing gears from the free-wheel units of bicycles, consisting of a first tool which comprises an appropriately shaped, metal elongated plate, having a smooth handgrip and a functional part provided with a plurality of impressions corresponding to elements of a free-wheel unit and apt to house at least part of said elements by mating with their shape so as to prevent rotation thereof, threaded holes being provided at the centre of said impressions, and at least two locking pin members apt to be screwed into said threaded holes for locking on the plate, in said impressions, the elements of the free-wheel unit having to be handled, and of a second tool of the type comprising a handle terminating with a half-moon shaped body, to an end of which is pivoted a transmission chain section for bicycles, a notch being provided along the whole inner archway of the half-moon shaped body of said tool, for housing the periphery of a gear with which the tool is in engagement.

4,157,609

PROCESS FOR THE MANUFACTURE OF A PALLET-MOUNTED CONTAINER

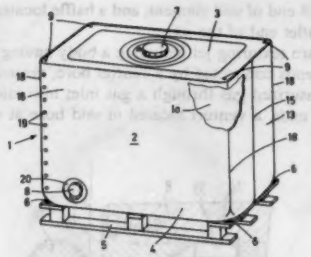
Udo Schütz, Rückersteg 4, D-5418 Selters, Fed. Rep. of Germany

Filed Aug. 24, 1977, Ser. No. 827,312

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638238

Int. Cl.[2] B23P *19/00*

U.S. Cl. 29—428 **2 Claims**



1. A method for manufacturing a pallet-mounted container for liquids, of the type that comprises a synthetic resin liner container within a sheet-metal jacket secured to a supporting pallet, comprising bending a rectangular blank of steel sheet to the shape of a tube, longitudinally butt-welding the tube, placing the welded tube over a fluid pressure press having two jaws adapted to move apart under fluid pressure, moving said two jaws apart under fluid pressure thereby to produce a jacket having two relatively short sides in contact with said jaws and two relatively long sides between said jaws, continuing the movement of said jaws apart until said relatively long sides are stretched beyond their elastic limit, closing the top and bottom of said jacket with said liner container inside, and securing said jacket to said pallet.

4,157,610

METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR

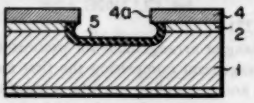
Kiyoo Kamei, Yokohama; Toshiaki Ikoma, Tokyo, and Hirokuni Tokuda, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 18, 1977, Ser. No. 825,720

Claims priority, application Japan, Dec. 20, 1976, 51-151941; Dec. 20, 1976, 51-151942; Dec. 20, 1976, 51-151943; Dec. 20, 1976, 51-151944

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—571 **6 Claims**



1. A method of producing a field effect transistor, comprising a first step of preparing a semi-insulating compound semiconductor substrate formed of GaAs containing 10^8 to 10^{13} atoms-cm^{-3} of an impurity, a second step of forming a high impurity concentration layer formed of GaAs of one conductivity type on one surface of the substrate, a third step of partly removing the high impurity concentration layer to divide said layer into two portions and expose partly the substrate surface, and a fourth step of forming a gate insulation film by subjecting the exposed portion of the substrate to anodization which is carried out while light having an energy greater than the

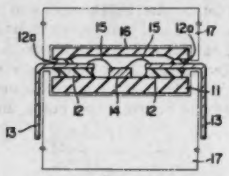
prohibition band width of the compound semiconductor is being irradiated to the exposed portion.

4,157,611

PACKAGING STRUCTURE FOR SEMICONDUCTOR IC CHIP AND METHOD OF PACKAGING THE SAME

Seishiro Ohwaki, Hinodemachi, and Motoharu Ogawa, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 11, 1977, Ser. No. 776,923
Claims priority, application Japan, Mar. 26, 1976, 51-32558
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—588 **5 Claims**



1. A method of packaging a semiconductor IC chip, comprising the steps of:

(a) the step of applying a mixture solution of glass having a low melting point on the confronting peripheral surfaces of a ceramic base and a ceramic cap disposed face to face, said glass being recessed so as to be spaced by a predetermined distance from outer edges of said ceramic base and cap in at least those portions of said base and cap where said lead frame is to be disposed, and said glass not being applied to that portion of said base and cap where said semiconductor IC chip is to be located;

(b) the step of sintering the thus prepared ceramic base and cap;

(c) the step of heating said ceramic base to soften said glass so that said semiconductor IC chip and said lead frame may be fastened to said ceramic base;

(d) the step of connecting the bonding pads of said semiconductor IC chip with the corresponding leads of said frame by fine metal wires;

(e) the step of fastening said ceramic cap to said ceramic base with said lead frame and said IC chip thereon by means of said glass for sealing said IC chip and a portion of said lead frame wherein said glass layer does not extend outwardly beyond said outer edges of both said ceramic base and said ceramic cap along said lead frame; and

(f) the step of supporting said semiconductor IC chip sealed within said ceramic base and cap by jigs, bending the external leads of said lead frame, and removing the unwanted portions of said lead frame by cutting.

4,157,612

METHOD FOR IMPROVING THE TRANSMISSION PROPERTIES OF A CONNECTORIZED FLAT CABLE INTERCONNECTION ASSEMBLY

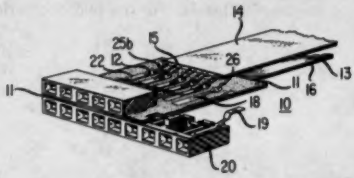
Attilio J. Rainal, Convent, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1977, Ser. No. 864,337
Int. Cl.[2] H01R *11/32*
U.S. Cl. 29—628 **16 Claims**

1. A method for improving the transmission properties of an unbalanced connectorized flat cable interconnection assembly including the steps of:

terminating a first set of generally parallel conductors on a first mapped set of connector contacts such that all conductors are connectable to a source of ground potential; and

terminating a second set of generally parallel conductors on a second mapped set of connector contacts such that specified ones of said conductors are connectable to a plurality of signal sources and the remainder of said conductors are connectable to said source of ground potential.

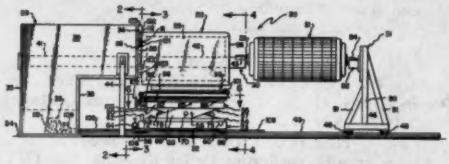


4,157,613

APPARATUS FOR INSERTING A ROTOR INTO A STATOR

Gordon F. Morrow, Cheektowaga, N.Y., assignor to D. A. Griffin Corp., West Seneca, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,917
Int. Cl.[2] H02K *15/16*
U.S. Cl. 29—732 **11 Claims**



1. Apparatus for inserting a rotor having a shaft into a stator having an opening adapted to receive said rotor, comprising:

a stationary support having a cantilevered beam extending outwardly therefrom in a horizontal direction, said beam having on its distal end a cradle for supporting one end of said shaft;

a pedestal support spaced horizontally from said stationary support and having a cradle aligned with said stationary support cradle for supporting the other end of said shaft; and

a carriage mounted for movement between said supports and having a platform for supporting said stator such that said beam may penetrate said opening;

whereby, when said rotor is held by said cradles, said carriage may be moved toward said pedestal support to cause said rotor to be inserted into said stator opening.

4,157,614

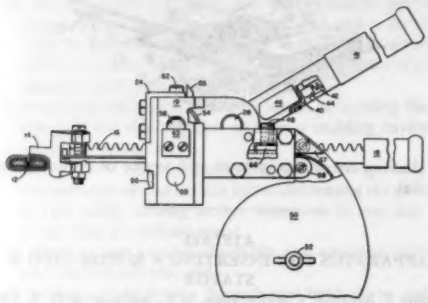
ARMOR WRAPPING TOOL

Teofilo Pring, Brookline, Mass., assignor to Boston Insulated Wire & Cable Co., Boston, Mass.

Filed May 18, 1978, Ser. No. 907,097
Int. Cl.[2] B23Q *1/00*
U.S. Cl. 29—745 **9 Claims**

1. A portable manually operated tool for contouring metallic tape and wrapping it as armor upon a cable comprising a toothed rack, a cable-engaging shoe detachably secured to one end of said rack, a first handle disposed at the other end of said rack, a frame composed of a plurality of structural members detachably secured together and mounted on said rack, a magazine for holding a supply of metallic tape depending from said frame, an adjustable pressure member on said frame adjacent said magazine, said tape being threaded through said pressure member, a pair of removable contouring roller dies disposed for rotation and radial movement relative to one another in said frame, said tape being further threaded between said roller dies, adjusting screws threaded into said frame and operative to move one of said dies relative to the other

whereby pressure on said tape by said dies is adjusted, a pinion having teeth meshing with those of said rack disposed for rotation in said rack, a second handle for rotating said pinion on said rack for limited distances to run said contouring dies



over limited lengths of said tape, and means for disconnecting said second handle from said pinion and permitting said contoured tape to pass through said shoe, rotation of said tool about said cable permitting wrapping of said contoured tape thereon as armor therefor.

4,157,615

PIPE CUTTER OF THE RATCHET TYPE

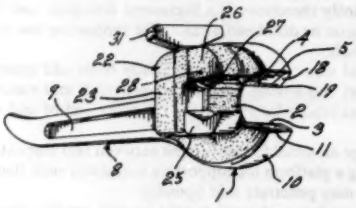
Aurèle Courty, 471 St. Madeleine St., Montreal, Quebec, Canada (H3K 2K8)

Filed Jan. 13, 1978, Ser. No. 869,346

Claims priority, application United Kingdom, Jan. 17, 1977, 01670/77

Int. Cl.[2] B23D *21/06*

U.S. Cl. 30—99 **5 Claims**



1. A pipe cutter comprising a partly tubular open-ended rigid body split along its full length to define a lateral opening through which a pipe can be inserted with said body rotatable around said pipe, said body having a peripheral groove interrupted by said lateral opening, one radial surface of said peripheral groove being defined by a flange integral with one end of said body and the opposite radial surface of said peripheral groove being defined by a removable retainer split ring removably secured to the opposite end of said tubular body, an elongated handle forming a split ring at one end thereof, said split ring engaged within said groove for relative rotation between said handle and tubular body, said split ring defining a lateral opening of substantially the same width as the lateral opening of said tubular body and registering with the latter opening in a predetermined angular position of the handle relative to said tubular body, a pawl and ratchet system formed between the contacting surfaces of said split ring and said groove of said tubular body with the ratchet teeth interrupted by said openings, said system including ratchet teeth formed on the radial surface of said flange and said split ring of said handle carries a pair of pawl members consisting of two pins freely extending through holes of said split ring, having a bevelled end engageable with said ratchet teeth and further including a leaf spring carried in a cavity of said split ring and pressing said pins against said ratchet teeth, said two pawl members spaced from each other a distance greater than the width of said lateral openings, whereby there is always one pawl member in contacting engagement with the ratchet teeth for the full 360-degree rotation of said handle around said body, and a pipe cutter member and an opposite pipe abutment member carried by said one end of said body and axially spaced from said split ring, one of said pipe cutter member and abutment member being mounted for radial movement relative to said body towards and away from the other of said pipe cutter member and said pipe abutment member to engage a pipe therebetween, manual means to move said radially movable member to press a pipe between said two members, said two members having a spacing therebetween in register with said lateral openings, whereby a pipe can be inserted through said registering lateral openings and between said two members, and said pipe cutter member pressed against said pipe and back-and-forth operation of said handle causes rotation of said body and cutter in one direction through at least 360 degrees to cut a pipe inserted within said body and between said cutter and pipe abutment members.

4,157,616

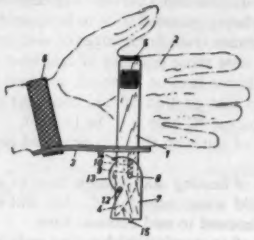
HAND TOOLS

Karl G. Lundqvist, Molinsgatan 4, Göteborg, Sweden (411 33)

Filed Dec. 20, 1977, Ser. No. 862,548

Int. Cl.[2] B26B *29/02*

U.S. Cl. 30—153 **2 Claims**



1. An improvement in hand tools of the kind comprising a sharp or pointed member, (such as the blade of a knife, or a spike) and a cover enclosing and pivotally connected to said sharp or pointed member and arranged to be swung outwards from a position wherein it protects said sharp or pointed member to position wherein it exposes said member, the improvement comprising a pivot shaft on said sharp or pointed member rigidly connected to said cover, an elongated aperture formed in said sharp or pointed member, said pivot shaft passing freely through said aperture, a compression spring inserted in said aperture, one end of said spring abutting against said pivot shaft, means being provided to lock said cover in its protective position said cover arranged to be displaced from said protective position only after having been displaced from the locked position in a direction inwards, towards said sharp or pointed member, at right angles to said pivot shaft of said cover.

4,157,617

ANIMAL SKINNING KNIFE

Marvin E. Frith, Rte. #2, Box #40, Coffeeville, Miss. 38922

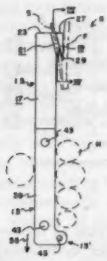
Filed Feb. 27, 1978, Ser. No. 881,654

Int. Cl.[2] B26B *11/00, 29/02*

U.S. Cl. 30—294 **5 Claims**

1. An animal skinning knife comprising: a handle and a unitary one-piece blade means; said blade means including a first member, a second member, and a throat member integrally joining said first and second members together; said first member of said blade means being elongated and having a blunt first end and a blunt second end, said second member of said blade means being elongated and having a blunt first end

and a second end and having a top edge and a bottom edge, said throat member of said blade means being elongated and having a blunt first end and a second end and having a first side and a second side and having a top edge and bottom edge, said top edge of said throat member being integrally attached to said bottom edge of said first end of said first member of said blade means, said bottom edge of said throat member being integrally attached to said top edge of said first end of said second member of said blade means, said second ends of said first and second members extending past said second end of said throat member, said first and second sides of said throat member sloping uniformly towards one another from said first end of said throat member to said second end of said throat



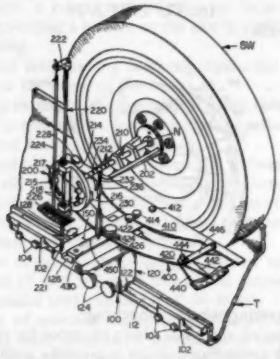
member to form a wedge-shaped cutting edge terminating at said second end of said throat member for cutting the skin of the animal being skinned and for separating the skin along the cut after it has been cut, said top edge of said second member sloping upwardly relative to said bottom edge of said second member continuously from said second end of said second member to said first end thereof for guiding the skin of the animal being skinned to cutting edge of said throat member and for separating the skin of the animal being skinned from the flesh thereof, said cutting edge of said throat member being straight and being perpendicular to the longitudinal axis of said first member, said handle being fixedly attached to said second end of said blade means.

4,157,618

METHOD AND APPARATUS FOR DETERMINING CASTER, CAMBER AND TOE-IN

Wilbert F. Davis, Sylvania, Ohio, assignor to Davis Wheel Aligning System, Inc., Sylvania, Ohio

Filed Jul. 11, 1977, Ser. No. 814,327
Int. Cl.[2] G01B *13/195*
U.S. Cl. 33—337 **18 Claims**



10. A caster and camber gauging device for steerable wheels of a wheeled vehicle, which steerable wheels have hubs and are axially aligned and mounted on separate turnable axes adjacent and inside said steerable wheels, said device comprising:

(A) spindle adaptors to be fixedly attached axially outwardly to and from each steerable wheel's hub including:

(1) plumb bob means,

(2) vertical members transversely mounted on the axis of said adaptors and means for angularly adjusting said vertical members on said axis of said steerable wheel to be in the same plane as the turning and rotating axes of its corresponding steerable wheel,

(3) depending pendular indicator means attached to the upper end of said vertical members and

(4) angle indicating means attached to the lower end of said vertical members for cooperating with said indicator means for directly indicating both the caster and camber angles of said steerable wheels, and

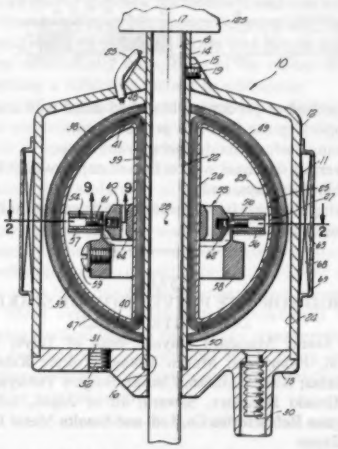
(B) gauge plate means mounted adjacent said wheels for aiding, with said plumb bob means, the adjustment of said vertical members in said same plane with the turning axis of said steerable wheels.

4,157,619

INCLINATION AND DIRECTION RESPONSIVE APPARATUS

Bernard R. Zuvela, Fountain Valley, Calif., assignor to Scientific Drilling Controls, Newport Beach, Calif.

Filed Oct. 14, 1977, Ser. No. 842,041
Int. Cl.[2] G01C *9/06, 17/30*
U.S. Cl. 33—352 **20 Claims**



1. Inclination and direction responsive apparatus comprising:

a source of periodially fluctuating electrical current;

a support movable between a predetermined position of zero inclination in which an axis fixed relative to the support extends directly vertically and positions in which the axis is inclined at different angles;

a flux gate assembly carried by said support and subjected to an ambient magnetic field and energized by said current and acting to produce an output which varies in response to changes in directional orientation of said support relative to the field;

said assembly including magnetic core means mounted for leveling movement relative to said support to remain level in differently inclined positions of the support, and periodically driven to magnetic saturation by said current, with the time of saturation being altered by said ambient field; and coil means flux linked to said core means in a relation producing said output varying with directional orientation;

an inclination coil carried by said support for movement therewith and flux linked to said flux gate assembly and energized to produce a magnetic field which extends essentially along said axis of the location of the flux gate assembly and tilts to differently inclined positions with the support and produces an output from the flux gate assembly which varies in response to changes in inclination;

means for selectively energizing or de-energizing said inclination coil in a relation producing a signal representing both direction and inclination when said inclination coil is energized, and producing a signal representing only direction when the inclination coil is de-energized; and

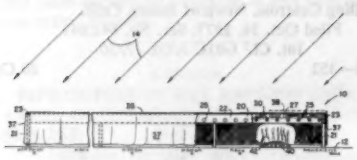
processing means for combining said signals representing both direction and inclination with said signal representing only direction to produce an output representing only inclination.

4,157,620

METHOD OF PRODUCING BLEACHED, DRIED FRUIT

Jonathan P. Chakerian, 269 W. Sycamore, Reedley, Calif. 93654

Filed Apr. 10, 1978, Ser. No. 895,253
Int. Cl.[2] F26B *7/00*
U.S. Cl. 34—12 **9 Claims**



1. A method of producing bleached dried fruit comprising:

A. supporting the fruit in a porous mass,

B. passing sulfur dioxide through the mass,

C. covering the mass with a film material which filters out visible light rays, and

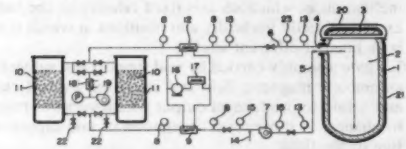
D. drying the mass by exposure to solar radiation filtered by passage through the film.

4,157,621

METHOD FOR THE PREVENTION OF SLAKING OF DOLOMITE BRICKS

Sadame Asano; Masahiro Hayase, both of Taiyo; Hiromasa Tabuchi, Fukuyama; Masao Takagi, Tokyo; Koichi Kasai, Yokohama; Koei Hoshino, Choshi; Suejiro Fukuya, Kyushu, and Hiroaki Hirahara, Sawara, all of Japan, assignors to Shinagana Refractories Co. Ltd. and Sumito Metal Industries, Ltd., Japan

Filed Oct. 27, 1977, Ser. No. 846,118
Claims priority, application Japan, Oct. 28, 1976, 51-128822
Int. Cl.[2] F26B *7/00*
U.S. Cl. 34—13 **1 Claim**



1. A method for the prevention of slaking of dolomite and/or magnesia-dolomite refractory lining comprising:

blowing dry air which is in the temperature range of 0°–60° C., relative humidity range of 0°–40%, and which has an absolute humidity less than 10 g/m^3 into a sealed converter or the like lined with dolomite refractory and/or magnesia-dolomite refractory,

circulating said dry air in the converter, and

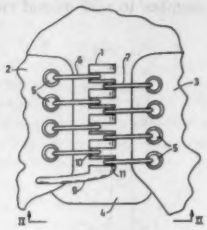
maintaining the interior of the convertor always under positive pressure during the blowing and circulating steps.

4,157,622

FASTENER FOR FOOTWEAR

Lance J. Carlyle, 120 Williams St., Cambridge, New Zealand

Filed Sep. 26, 1977, Ser. No. 836,680
Int. Cl.[2] A43C *11/00*
U.S. Cl. 36—50 **12 Claims**



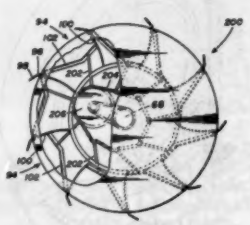
1. A fastener for an article of footwear having two opposed lacing flaps, said fastener comprising a rotatable elongated body member having two groups of attached arms, each of which has at least two arms, each group being oppositely disposed, said arms being pivotally and eccentrically connected to said body member, the arms of each group being arranged in a series lengthwise along the body member and connected to the body member for pivotal movement along a substantially common axis opposite that of the other group, the arms having engaging means engagable with the lacing flaps, and means to rotate the body member, the axis of rotation of the body member lying lengthwise with respect to the body member, to alter the relative position of said common axes.

4,157,623

CONVEYOR FOLDING AND MOLDBOARD OPERATION FOR EXCAVATING AND LOADING SYSTEMS

Charles R. Satterwhite, Dallas, Tex., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Division of Ser. No. 660,515, Feb. 23, 1976, Pat. No. 4,062,562, which is a continuation of Ser. No. 554,671, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 400,043, Sep. 24, 1973, Pat. No. 3,897,109, which is a continuation-in-part of Ser. No. 238,089, Mar. 28, 1972, abandoned. This application Nov. 29, 1976, Ser. No. 745,860
Int. Cl.[2] E02F *3/24*
U.S. Cl. 37—190 **5 Claims**



2. An excavating wheel comprising:

a pair of spaced apart side plates mounted for rotation about and each extending radially outwardly with respect to a central axis of rotation;

a plurality of stationary walls each extending between the side plates and each having outwardly projecting material cutting means;

said stationary walls being stationary with respect to the side plates;

a plurality of movable walls each extending between the side plates for cooperation with one of the stationary walls to define a digging bucket;

said plurality of stationary walls and said plurality of movable walls cooperating with the side plates to define a plurality of digging buckets positioned immediately adjacent one another about the entire periphery of the excavating wheel;

each of said movable walls being supported by the side plates for pivotal movement between a material receiving position and a material dumping position;

means entirely enclosed by the digging buckets and the side plates and responsive to rotation of the excavating wheel for positively pivoting the movable wall of each digging bucket to the material receiving position during one portion of said rotation and for positively pivoting the movable wall of each digging bucket to the material dumping position during another portion of said rotation;

the movable wall pivoting means comprising:

a plurality of push rods each connected at one end to the movable wall of one of the buckets;

a nondriven chain interconnecting the ends of the push rods remote from the movable walls; and

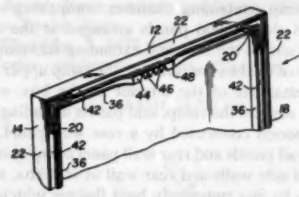
a member defining a portion of the path of the chain and fixedly supported at a point offset from the rotational axis of the excavating wheel for engagement with each push rod to move the corresponding movable wall to the material dumping position.

4,157,624

PICTURE FRAME AND METHOD FOR MAKING SAME

David D. Sobel, 15415 N. 22nd St., Phoenix, Ariz. 85022

Filed Feb. 7, 1977, Ser. No. 765,994
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152.1 1 Claim



1. In a frame having a plurality of essentially separable sides each of which is connected together to form a completed frame for supporting a picture or the like in a plane, the invention comprising,

each of said sides having retaining means for supporting a picture in the plane of the frame,

connecting means to engage two adjacent sides at the ends thereof to releasably couple the same together to form the completed frame,

each of said sides including a channel defined therein and having rib means extending into said channel such that when said connecting means is inserted into the channel of adjacent sides for forming the frame the same engage said ribs means with a locking force fit,

at least one of said sides having a lengthwise support spaced rearward of said retaining means and extending substantially parallel with the plane of the frame,

a plurality of notched supports of substantially sawtooth shape on said lengthwise support and extending for a portion thereof to enable at least one of said teeth to engage a mounting member to support said frame therefrom,

and said notched supports and lengthwise support of said one side all being formed unitary and integral with each other although said one side is separate from said other plurality of sides with which the same is connected to form the completed frame,

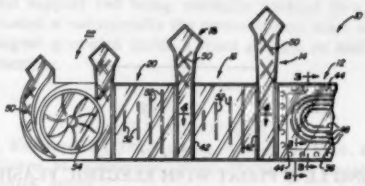
said lengthwise support being bent intermediate the ends of said one of said side sections with the remaining lengthwise portions of said one side section remaining in the same plane from which said support was bent.

4,157,625

ENTERTAINMENT LIGHTING DISPLAY

Roger C. Bowser, Box 5032, Rte. 3, Apache Junction, Ariz. 85220

Filed Mar. 1, 1976, Ser. No. 662,567
Int. Cl.[2] G09F *13/12, 19/16*
U.S. Cl. 40—427 6 Claims



1. Lighting display for a viewer area, comprising:

a rear mirror facing the viewer area;

a one-way mirror disposed intermediate said rear mirror and the viewer area to define a space between said rear mirror and said one-way mirror, said one-way mirror arranged to appear substantially transparent to the viewer area while presenting a reflective surface to said space;

a substantially opaque rim enclosing the periphery of said space and intersecuring said rear mirror and said one-way mirror in spaced relationship;

a plurality of opaque barriers traversing said space to divide the latter into a plurality of compartments; and

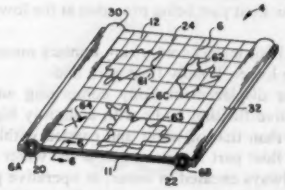
separate electrical lights disposed in each of said compartments whereby said one-way mirror and said rear mirror repeatedly reflect light from said lights to produce multiple reflection images of said lights to the viewer area, said lights in at least one of said compartments comprising at least three vertical, parallel, thin fluorescent lights of differing vertical lengths and equally transversely spaced from one another, said vertical lights being spaced at differing distances from said rear mirror in relation to their differing vertical lengths.

4,157,626

MAPS AND CHARTS HOLDER

W. H. Bedinghaus, 4930 62nd Ave. S., St. Petersburg, Fla. 33715

Filed Jul. 22, 1977, Ser. No. 818,109
Int. Cl.[2] G09F *11/29*
U.S. Cl. 40—518 17 Claims



1. A device for holding a flexible document, comprising in combination:

a first and a second member each having a substantially planar central region interposed between end regions;

each of said end regions including a protrusion extending outwardly relative to said substantially planar central region;

said substantially planar central region of said first and second members being transparent;

slidable mounting means for mounting said first member relative to said second member with said protrusions defining end containers for receiving rolled portions of the flexible document and with said central regions protecting an intermediate portion of the flexible document; and

said slideable mounting means extending along said protrusions of each said first and second members enabling said first member to be moved relative to said second member to expose the flexible document for marking thereon.

4,157,627

FISHING LINE FLOAT WITH ELECTRIC FLASHLIGHT

Rudolf Tschelisnik, Grossfriedrichsburger Strasse 8, 8000 Munchen 82, Fed. Rep. of Germany

Filed Jun. 20, 1977, Ser. No. 807,993

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628030

Int. Cl.[2] A01K *93/00*

U.S. Cl. 43—17 **5 Claims**

1. In a float for electrical flash illumination as a result of movement or pull of a fishing line fixed to the float and bearing a hook at its opposite end, said float comprising a hollow float housing and having an electric battery connected in series to an electrical illuminating element and having a hollow float part in the direction towards the water and supporting therein a water displacement body to operate said switching means, the improvement comprising:

said hollow float part being provided at the lower end of the float,

said switching means comprising contact means projecting into the lower, hollow float part, and

said water displacement body comprising an electrically conductive floating body with a slightly higher specific weight than that of water and carried within said lower hollow float part at a point below the water surface so as to be always encased in water, in operative position with respect to said contact means and operable to close said circuit between said electric battery and said illuminating element, by contact with said electrically conductive floating body.

4,157,628

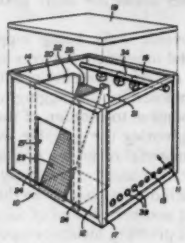
RAT TRAP

Moe Saslove, 1889 Wingate, Bloomfield Hills, Mich. 48013

Filed Feb. 13, 1978, Ser. No. 877,376

Int. Cl.[2] A01M *23/08*

U.S. Cl. 43—65 **1 Claim**



1. A rodent trap comprising a sheet metal box having interconnected front, rear and side walls, a floor, and a cover with the walls having relatively smooth interior surfaces;

an opening in the front wall at the bottom thereof, and a ramp arranged within the box and extending from the bottom of such opening upwardly and inwardly of the box and terminating a short distance beneath the cover, with the ramp being arranged at an acute angle relative to the vertical and a wire mesh fastened upon the upper surface of the ramp for roughening the ramp surface to enable a rodent to gain a foothold thereon;

the space between the side edges of the ramp and the front wall being closed off relative to the remainder of the box by a separate ramp containing chamber within the box, said ramp containing chamber comprising vertically arranged sheet metal panels arranged at the edges of the ramp, within the box, and extending substantially the full height of the box for isolating the ramp upper surface from the remainder of the interior of the box, except at the upper edge of the ramp, said panels including parallel side wall panels connected by a rear wall panel, said paralel side wall panels and rear wall panel being spaced inwardly of said side walls and rear wall of said box, said side wall panels having oppositely bent flanges which are secured to the interior surface of said front wall, a notch formed in the upper edge of said rear wall panel, said ramp having its upper edge bent into an inverted V-shape for loosely engaging over the base of said notch of said rear wall panel, with the ramp being otherwise unconnected to the box and thereby being manually removable from the box when desired;

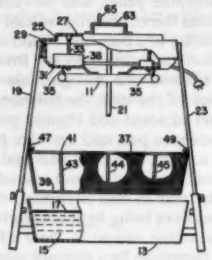
and bait supporting means located within the box, a short distance below the cover and a sufficient distance rearwardly of the upper edge of the ramp to attract a rodent, such as a rat, but just beyond its reach when it is positioned upon the ramp upper edge said bait supporting means comprising a rod extending transversely of the side walls of the box, with means for securing the rod ends to said side walls, and with the rod being spaced between the upper edge of the ramp and the rear wall of the box and including bait support means for suspending bait from the rod;

whereby a rodent will enter the opening in the front wall, climb up the ramp and attempt to reach the bait from the upper edge of the ramp and thereby fall into the box, wherein it will be trapped within the box due to its inability to climb up the smooth interior wall surfaces to regain the upper edge of the ramp.

4,157,629
INSECT TRAP

James R. Parks, Ohio County, Ky., assignor to Ralph H. Romans, Owensboro, Ky.

Filed Apr. 10, 1978, Ser. No. 895,040
Int. Cl.[2] A01M *1/04*
U.S. Cl. 43—113 6 Claims

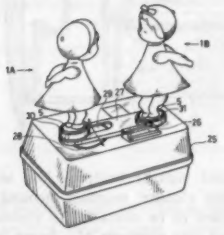


1. An insect trap comprising a source of UV light, a pan disposed vertically below said source, a plurality of rods supporting said light above said pan, a quantity of water in said pan, a film of petroleum liquid floated on the surface of said water, the water and the petroleum liquid thereon being subject to overflow in response to unwanted overfilling of said pan with water, and overflow means connected to said pan responsive to a rise in water level above a predetermined amount to cause overflow of said water without overflow of said petroleum liquid, said overflow means comprising hollow sleeve means surrounding at least one of said rods and a shunt connection between said pan and said sleeve means.

4,157,630
MAGNET EQUIPPED TOY THAT CHANGES POSTURE

Suezo Sawai, Kyoto, Japan, assignor to Nichiten Shosan Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 7, 1977, Ser. No. 774,688
Claims priority, application Japan, Mar. 18, 1976, 51-33598[U]
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—3 7 Claims

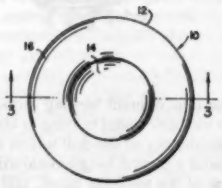


1. A mechanical toy comprising:
a hollow box;
a slot provided on said box and communicating with the interior of said box;
a sliding plate provided on said box;
a coin slot provided on said sliding plate superjacent said slot in said box;
an elongated moving plate pivotally coupled at a first end to said box, said moving plate having a longitudinal slot formed in a second end of said moving plate, said moving plate further being coupled to said slide plate such that said sliding plate oscillates when said moving plate is pivoted about said first end;
a motor driven rotating plate provided in a top of said box and subjacent said slot in said moving plate;
a holder being provided on said first and second ends of said moving plate, said holder on said second end being provided such that it slides back and forth in said longitudinal slot without rotating, said holder in said second end further being rotatably coupled to an eccentric point on said rotating plate; and
a figure coupled to each of said holders, said figure comprising:
a leg assembly;
a support member coupled to said leg assembly;
a torso assembly pivotally coupled to said support member, said torso assembly including a skirt extending over said support member;
a support rod provided in a top of said torso assembly;
a head assembly pivotally coupled to said support rod, said support rod being pivotally coupled to a point located at substantially the center of said head; and
a magnet provided inside a front portion of said head assembly.

4,157,631
TOY FLYING SAUCER

Harry P. Kifferstein, 27250 Harvard, Southfield, Mich. 48076, and Warren M. Kifferstein, 29632 Middlebelt, Farmington Hills, Mich. 48024

Filed Apr. 18, 1977, Ser. No. 788,279
Int. Cl.[2] A63H *33/18*
U.S. Cl. 46—74 D 8 Claims

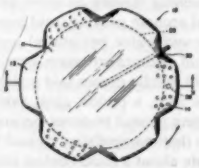


1. A toy flying saucer comprising a relatively thin circular solid imperforate body having a substantially constant thickness and defining a central portion and a concentric peripheral annular portion integrally formed with said central portion, wherein said annular portion is in the form of a toric cavity having a peripheral rim disposed in a single substantially circular plane, and wherein said central portion is in the form of an inverted dome gradually merging into said annular portion and having a top extending downwardly toward and above said circular plane.

4,157,632
AERIAL TOY

Robert A. Everett, 704 S. East Ave., Tulsa, Okla. 74108

Filed Jun. 10, 1977, Ser. No. 805,517
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—74 D 9 Claims



1. An aerodynamic toy having an upper surface extending outward from its center, that embodies a series of small extended airfoils, contiguous to one another, forming a larger

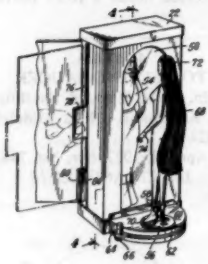
unitary airfoil body having the general shape of an inverted saucer with scalloped edges formed by the outer most edges of the small extended airfoils, with the tips of these small extended airfoils having a substantial flat bottom near their periphery and the balance of the lower bottom surface being concaved and contains a hollow tube having one end closed and the opposite lower end containing a means for filling and dispersing of fluid, and this dispersing means extends into the air currents that pass through the dispersing means.

4,157,633

DOLL AND DEVICE APPARENTLY SUPERPOSING AN OBJECT ON DOLL'S REFLECTED IMAGE

Lawrence Reiner, Woodbury, N.Y., and Michael Henning, Fort Lee, N.J., assignors to Mego Corp., New York, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,662
Int. Cl.[2] A63H *33/22*; F21P *5/02*
U.S. Cl. 46—116 **11 Claims**



1. A toy for the concomitant turning motion of a doll and linear motion of a movable panel bearing at least one recognizable portion of the identity of the doll which comprises means to turn the doll about a central longitudinal axis in conjunction with linear motion of the movable panel, said means comprising a hollow planar platform, a centrally pivoted substantially circular planar driving member disposed within and in parallel relation with said platform, said platform having a semicircular section and a rectangular section, the semi-circular section of said platform being joined along its diameter to a side of the rectangular section of said platform, said driving member being pivotally mounted within said platform by a central axle, said central axle being disposed substantially at the center of the diameter of the semi-circular section of said platform, said semi-circular section of said platform being provided with an arcuate split, a handle, said handle extending from the perimeter of said driving member through said arcuate slit, so that said driving member within said platform may be turned about said central axle by arcuate manipulation of said handle, the means to mount the doll comprising a pedestal, said pedestal being mounted on said semi-circular section of said platform by a central rotation axle, said central rotation axle extending through said platform, a circular pedestal rotation gearing means, said pedestal rotation gearing means being coaxially attached to said central rotation axle within said platform, said circular driving member having an inner arcuate gearing and an outer perimetral arcuate gearing, said inner arcuate gearing being opposite to said outer perimetral arcuate gearing and being geared to said pedestal rotation gearing means, so that manipulation of said handle causes said pedestal to rotate about its central rotation axle, a pinion gear, said outer perimetral arcuate gearing being geared to outer perimetral gear teeth of said pinion gear so that manipulation of said handle causes said pinion gear to rotate about a fixed central axis, said pinion gear having an inner gearing, a linear rack, said rack being disposed in the rear of said rectangular section of said platform, said rack depending from the means to move the movable panel, the inner gearing of said pinion gear being geared to said rack, so that rotation of said pinion gear causes said rack to move linearly and thereby to move the movable panel.

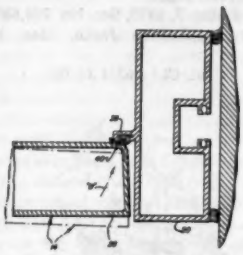
3. A doll with a simulated identity combined with an accessory therefor, said combination comprising a transparent panel, said transparent panel being both light transmissive and light reflective, a doll, means to mount said doll in front of said transparent panel, said transparent panel defining the front of an enclosure, a movable panel, said movable panel having a surface with portions thereof bearing at least two recognizable portions of the identity of a doll, one of said at least two recognizable identity portions relating to the front of the doll and another of said at least two recognizable identity portions relating to the back of the doll, the balance of the surface of said movable panel adjacent said identity portions being light absorptive, and means to pass said movable panel into the rear of said enclosure to a position such that said movable panel is disposed substantially parallel to and spaced from said transparent panel in the rear of said enclosure, the balance of the interior of said enclosure being light-absorptive, said doll being placed in said mounting means in front of said transparent panel and spaced therefrom by a distance substantially equal to the distance between said transparent panel and said position of said movable panel so that the image of said doll reflected from said transparent panel appears to be coincident with said identity portion of said movable panel within said enclosure, and means whereby, when mounted, said doll is turnable about a central longitudinal axis in conjunction with linear motion of the movable panel parallel to the transparent panel, so that the reflected image of the doll together with a corresponding recognizable identity portion may alternately appear to be viewed in the enclosure in simulated front and back views.

4,157,634

WEATHERSTRIPPING

Ellwin L. Coulston, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Apr. 24, 1978, Ser. No. 899,228
Int. Cl.[2] E06B *7/23*
U.S. Cl. 49—485 **14 Claims**



1. An elongated weatherstripping for sealing against a hingedly mounted closure member around the periphery thereof and adapted to be mounted to extend longitudinally along one or more stop elements of a frame in facing relation with one side face of said hinged closure member; said weatherstripping comprising:

a body of flexible material having an inner portion including a base and key means adapted to be secured to a stop element on said frame and an edge portion of said base projecting laterally outwardly along one edge of and in overlapping relation with said stop element beyond said key means along one edge thereof, said base of outwardly convex transverse cross-section facing away from said key means; and

a deflectable outer sealing element of flexible material integral with said body and pivotally joined to said base along an outer edge of said laterally projecting edge portion in a reverse turn, said sealing element of outwardly convex transverse cross-section having an outwardly facing

curved sealing surface adapted to seal against said one side face of said closure member when said member is in a closed position with respect to said frame, said surface extending outwardly from said reverse turn toward said closure member adjacent a mid portion thereof and said outer sealing element being deflectable inwardly toward said body upon pivotal movement resulting from inward contact and sliding lateral contact with said closure member when said member is pivotally moving toward said closed position with respect to said frame, said outer sealing element including an inwardly deflectable free edge opposite said reverse turn.

4,157,635

GRINDING MACHINE FOR GRINDING A HELICAL GROOVE IN A WORKPIECE OF TAPERING AXIAL SECTION

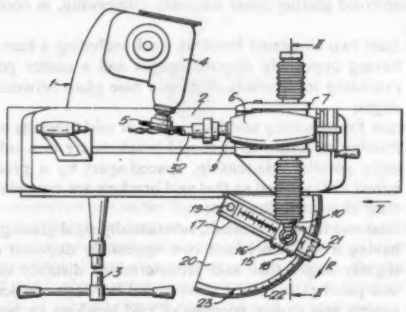
Maurice M. Ward, April Cottage, Ringwood Rd., Ferndown, Dorset, England

Filed Aug. 30, 1977, Ser. No. 829,189

Claims priority, application United Kingdom, Aug. 31, 1976, 36024/76

Int. Cl.[2] B24B *19/02*

U.S. Cl. 51—95 LH **17 Claims**



1. A grinding machine for grinding a helical groove in a workpiece of tapering axial section, comprising a rotatable spindle for mounting the workpiece for rotation about its axis, means for supporting a rotary grinding wheel to grind said groove, means for effecting rectilinear translation of said spindle with respect to said grinding wheel, and means for rotating the spindle concurrently with said rectilinear translation, said rotating means comprising a driving member operatively connected between said spindle and a point on a pivotally mounted arm, said point being constrained to move in an arcuate path having a predetermined radius, said driving member having a component of movement in a direction providing for rotation of said spindle, said arm being in the form of a slideway on which is mounted a slide lockable in desired radial positions, the driving member being secured to the slide, and said arm being arranged to rotate about its pivotal axis concurrently with said rectilinear translation.

4,157,636

CONTROL MEANS FOR A LENS-EDGE GRINDING MACHINE

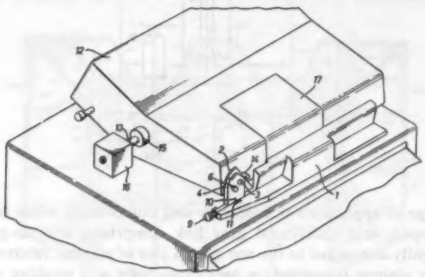
Stanley Wrigglesworth, Driffield, England, assignor to Rodway Optical Industries Limited, Yorkshire, England

Continuation of Ser. No. 513,894, Oct. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 324,821, Jan. 18, 1973, abandoned. This application Dec. 19, 1975, Ser. No. 642,528

Claims priority, application United Kingdom, Jan. 22, 1972, 3141/72

Int. Cl.[2] B24B *9/14*

U.S. Cl. 51—101 LG **2 Claims**



1. Control means, for a lens-edge grinding machine of the kind including a frame structure, pivot means on said frame structure, a lens carrier assembly mounted by said pivot means on said frame structure and rockable about on and translatable linearly along the axis of said pivot means, and means biasing said lens carrier assembly in one axial direction along said pivot means, said control means comprising:

(i) a mount linearly slidable on said frame structure parallel to the axis of the pivot means,

(ii) means acting between said mount and said frame structure for adjusting said mount linearly thereon and for retaining said mount in a selected position of linear adjustment

(iii) a pivot on said mount having its axis normal to the plane of linear adjustment of said mount,

(iv) a linear edge cam supported rotatably on said mount by said pivot,

(v) means acting between said linear edge cam and said mount for retaining said linear edge cam in a selected position of rotation about said pivot, and

(vi) a follower on said lens carrier assembly position by said bias to coact with said linear edge cam for effecting linear movement of the carrier assembly as a function of rocking movement thereof, said linear edge cam retaining means comprising a locking element movably positioned in said mount for engagement in any selected one of a plurality of recesses in said edge cam, and means resiliently urging said locking element into engaged position.

4,157,637

PLANETARY-TYPE LAPPING MACHINE FOR LAPPING A GROUP OF WORKPIECES

Petr N. Orlov, Moscow; Mukim M. Khasanov, Dushanbe; Vladimir G. Nedospasov, Dushanbe; Valery A. Peshkov, Dushanbe, and Alexandra A. Savelova, Moscow, all of U.S.S.R., assignors to Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana, U.S.S.R.

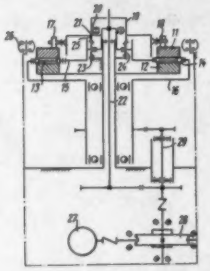
Filed Aug. 30, 1977, Ser. No. 829,151

Int. Cl.[2] B24B *7/16*

U.S. Cl. 51—133 **2 Claims**

1. A planetary-type plane lapping machine comprising: a stationary lapping disc; a rotary driven rotary lapping disc; a cage having sockets for containing components to be lapped between the stationary and rotary lapping discs; a sun-and-pla-

net lapping gear comprising a planet pinion constituting said cage, a sun gear and a ring gear driving said planet pinions; a differential gear link effecting a force transmitting connection of said sun gear with said rotary lapping disc for driving said rotary lapping disc at an angular speed approximately double the angular speed of rotation of a center of the cage about an axis of rotation of said rotary lapping disc thereby relieving the



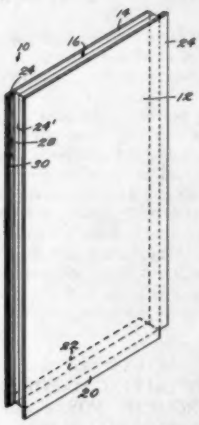
cage of application of forces by said components when being lapped; said differential gear link comprising a cross-piece rigidly connected to the sun gear, a pair of pinions, intermeshing pinions supported on said cross-piece and meshing with said pair of pinions, one pinion of said pair of pinions being fixed and the other pinion being in driving connection with said rotary lapping disc, and carrier means providing said driving connection.

4,157,638

BUILDING PANEL AND UTILIZATION THEREOF

Alphonse Della-Donna, Fort Lauderdale, Fla., assignor to Thermo-Core Building Systems, Inc., Fort Lauderdale, Fla.

Filed Oct. 3, 1977, Ser. No. 839,037
Int. Cl.[2] E04B *1/16*; E04C *2/10*
U.S. Cl. 52—173 R **8 Claims**



1. A building structure intermediate construction comprising

a pair of exterior substantially quadrate panels, each panel formed of stiff lightweight relatively inexpensive cellulosic material,

an interior substantially quadrate panel, formed of insulating material having a generally foam structure, of generally the same width and length as each said exterior panel,

means for attaching said interior panel between said exterior panels,

said exterior panels having tab portions along a first edge thereof extending past the termination of said interior panel,

at least one of said exterior panels having a tab portion along a second edge thereof extending past the termination of said interior panel, said second edge being a generally perpendicular edge of said exterior quadrate panel to said first edge,

an interior substantially quadrate panel of stiff lightweight relatively inexpensive cellulosic material,

a second substantially quadrate panel formed of insulating material having a generally foam structure, said interior panel of stiff cellulosic material being disposed between said interior foam structured panels, and said interior panels being sandwiched between said exterior panels, and

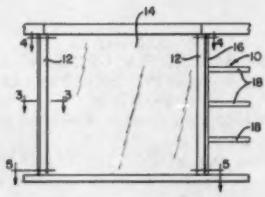
means for attaching said interior foam structured panels to said interior stiff panel, and to said exterior panels.

4,157,639

GLAZING PANEL ASSEMBLY

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Filed Sep. 9, 1977, Ser. No. 831,898
Int. Cl.[2] F04B *1/32*
U.S. Cl. 52—222 **6 Claims**



1. For use with a structure having suitable exterior framing, an improved glazing panel assembly comprising, in combination:

at least two elongated brackets, each including a base plate having oppositely disposed edges and a center portion extending transversely from said base plate between said edges;

means for mounting said base plates of said brackets to said framing structure so that said brackets are in a substantially parallel relationship, spaced-apart by a predetermined distance and so that said brackets are expandable in their elongated direction;

at least one flexible, resilient, substantially rigid glazing plate having a width between two oppositely disposed edges slightly larger than said predetermined distance so that said panel plate can be compressed between and secured against said center portions of said brackets by bending said plate along its length and securing said oppositely disposed edges between said center portions; and

a resilient sealing strip for insertion between one end of said panel and said framing structure;

wherein said brackets and said panel are secureable to said framing at the other end of said panel opposite said one end so that said panel and brackets expand and contract together relative to said framing and said resilient strip.

4,157,640

PREFABRICATED BUILDING PANEL

André A. Joannes, Boulevard Olivier de Serres, F-30400 Villeneuve-les-Avignon, France

Filed Aug. 10, 1977, Ser. No. 823,275
Int. Cl.[2] E04C *2/22*
U.S. Cl. 52—309.7 **9 Claims**

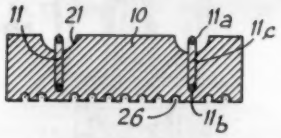
1. In a prefabricated building panel for use as a floor element of the type having a block of insulating expanded polymer

material and a reinforcement structure, wherein said reinforcement comprises:

(a) stiffener elements completely embedded in said block of expanded polymer material;

(b) compression elements not coated with insulating material, said compression elements freely extending longitudinally in grooves formed on the upper face of said block;

(c) means for connecting said stiffener elements to said compression elements; and



(d) projections on said stiffener and compression elements at the ends of the panel to form supporting portions of the panel, and wherein said projections support first connecting elements which extend substantially along the entire length of the end of the panel and are attached to said projections and second connecting elements of shorter length which are movable with respect to said projections for interconnecting projections of adjacent panels.

4,157,641

CONNECTOR FOR METAL PARTS

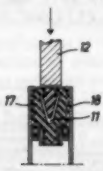
Wilhelm Hasselbacher, 8530 Neustadt, Aisch, Fed. Rep. of Germany

Filed Apr. 20, 1977, Ser. No. 789,030

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619707

Int. Cl.[2] E06B *3/16*

U.S. Cl. 52—802 **13 Claims**



1. An improved connector for spaced metal parts, said metal parts having facing projections of L-shape cross section; comprising an elongated one-piece core of plastic material shaped for longitudinal sliding engagement and to enclose the outer limbs of said L-shape projections, said core being substantially non-elastic at the part thereof engaging said projections but of increased elasticity at the outer part and having a longitudinal cavity in this outer part; and a strip of wedge shape cross section engaged in said longitudinal cavity.

4,157,642

CATCH FRAME FOR FRUIT PICKER

Donald L. Butler, Fort Myers, Fla., assignor to American Citrus Machinery Inc., Labelle, Fla.

Filed Sep. 13, 1976, Ser. No. 722,406

Int. Cl.[2] A01D *46/00*

U.S. Cl. 56—329 **14 Claims**

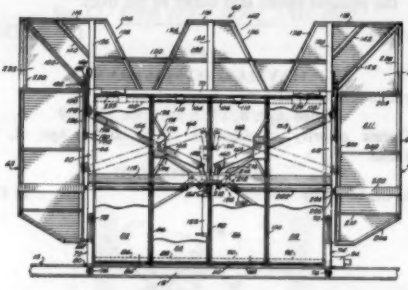
1. A fruit catch frame for pivotal connection to a conveyor trailer for movement between a generally vertical position and a generally horizontal position for positioning relative to a tree of a citrus fruit variety, for example, to catch fruit dislodged from the tree and to move said fruit onto a conveyor carried by the trailer for movement into a receptacle, said catch frame comprising

a central conveyor portion including a peripheral frame, conveyor means to move fruit disposed thereon in the horizontal position onto the trailer conveyor, and a hinge connection from said frame to a side rail of the trailer,

an outer portion including a frame and a top coverplate over said frame,

a pair of side wing portions, each including a frame, a top coverplate over said frame, and a hinge connection to one side rail of a pair of opposed side rails of said peripheral frame for pivotal movement relative thereto between an outwardly extended position and an inwardly folded position,

a first drive means to selectively move the fruit catch frame between the generally vertical and horizontal positions,



a second drive means cooperating with the first drive means to power said conveyor means,

a third drive means cooperating with the first and second drive means to move said front portion between a retracted position in a generally overlying relation to an outer upper segment of said conveyor portion, a second, forwardly extended position relative to said conveyor portion and, a third, upwardly angled extended position relative to said conveyor portion, and

inter-operational means relative to said third drive means to angle both of said side wing portions upwardly from said outwardly extended positions with the fruit catch frame in the generally horizontal position.

4,157,643

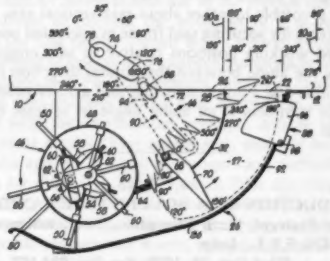
BALER LOADING APPARATUS

Allen A. White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 675,529, Apr. 9, 1976, Pat. No. 4,132,163. This application Mar. 16, 1977, Ser. No. 778,248

Int. Cl.[2] A01D *39/00*

U.S. Cl. 56—341 **9 Claims**



1. In a crop baler having a baling chamber and a plunger reciprocable within said chamber, the improvement comprising:

a pickup for lifting crop materials from the ground;

an elongated tubular duct leading from the pickup to the baling chamber,

said duct having an inlet adjacent said pickup and an outlet adjacent said baling chamber,

said plunger being disposed across said outlet during a portion of its reciprocation to thereby close the outlet;

a packer at said inlet of the duct positioned to feed a continuous stream of crop materials into the duct from the pickup,

the holding capacity of said duct relative to the feeding capacity of said packer being such that, when said outlet of the duct is closed by the plunger, the packer may compact the materials it feeds to the duct into a precompressed charge of materials that fills the duct from inlet to outlet and assumes the internal configuration thereof; and

a loader separate from said packer that is operable to stuff the precompressed charge into the baling chamber when the plunger opens said outlet of the duct.

4,157,644

HAYMAKING MACHINES

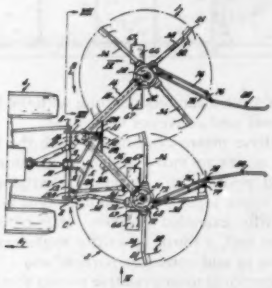
Cornelis van der Lely, Zug, Switzerland

Filed Apr. 8, 1977, Ser. No. 786,029

Claims priority, application Netherlands, Apr. 8, 1976, 7603683

Int. Cl.[2] A01D *84/00*

U.S. Cl. 56—370 **22 Claims**



1. A haymaking machine comprising a frame and at least two rake members being rotatably mounted on said frame, said rake members each being rotatable about corresponding upwardly extending axes defined by shaft means that depend from respective mountings, said mountings being secured to two respective elongated beams of said frame and said beams extending substantially horizontally and forwardly with respect to their respective mountings to an interconnection with one another, coupling means connectable to a lifting hitch of a prime mover, pivot means having a substantially vertical axis in said frame proximate said interconnection of said beams and said coupling means whereby said beams with said rake members are pivotable together about said vertical axis, and means in said frame for securing said frame in a selected one of at least two fixed working positions relative to said coupling means whereby the angle between the normal direction of travel of the machine and a line connecting said axes of rotation of said two rake members is an acute angle in at least one of said positions.

4,157,645

PRODUCTION OF A BOUCLE TYPE FANCY YARN

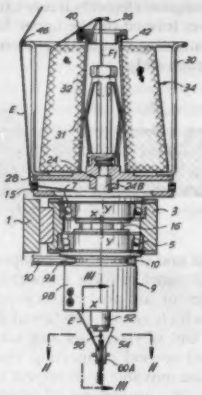
Giuliano Sostegni, Sesto Fiorentino, Italy, assignor to Chenil Cont GS. S.R.L., Italy

Filed Oct. 25, 1978, Ser. No. 954,607

Int. Cl.[2] D02G *3/42*

U.S. Cl. 57—24 **4 Claims**

1. In a device for the production of a boucle type fancy yarn, two off-center rotary members, off-center bearing means carried by the rotary members, a central element mounted on said bearings so that the central element remains stationary, a tool of generally triangular shape with a lower extension, said tool being carried by the central element, yarn entraining means at opposite sides of said lower extension, one of said two rotary members being arranged to feed an effect yarn to the tool whereby turns of said effect yarn are formed around the tool,



means for feeding a first core yarn along the tool extension to pass within the turns, and means for feeding a second core yarn on the outside of the turns of the effect yarn, said yarns being twisted at the exit from the entraining means.

4,157,646

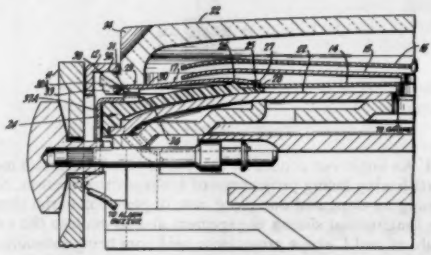
ALARM SWITCH AND ALARM SET DEVICE

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 19, 1977, Ser. No. 861,590

Int. Cl.[2] G04C *21/16*

U.S. Cl. 58—19 B **6 Claims**



1. An alarm timepiece including a switch and an alarm time set mechanism to activate an electric alarm circuit at a predetermined time interval comprising:

a manually rotatable crystal;

an hour hand comprising one contact of the switch;

an electrically conductive alarm set ring extending circumferentially about the time piece and affixed to said crystal and rotatable therewith;

an alarm set indicator comprising the other switch contact, said indicator being mounted at one end to the alarm set ring and contacting the hour hand with the other end as said hour hand is rotated into contact therewith;

a slip ring extending circumferentially about the timepiece and having biasing means for engaging the alarm set ring and exerting bias on the alarm set ring for providing spring bias mounting and assembly of the crystal and the alarm set ring inside a housing member by spring pressure against the housing member and for maintaining electrical

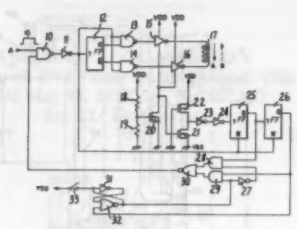
connection between the alarm set ring and the alarm circuit.

4,157,647

HAND REVERSING SYSTEM FOR AN ELECTRONIC TIMEPIECE

Norio Takahashi, and Teruo Ito, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Jul. 21, 1977, Ser. No. 817,617
Claims priority, application Japan, Jul. 21, 1976, 51/86749
Int. Cl.[2] G04B *27/00*; G05B *19/40*
U.S. Cl. 58—85.5 **15 Claims**



1. An electronic timepiece having means for selectively resetting in a forward or in a reverse direction, comprising a stepping motor having a stator, a coil on said stator for producing magnetic flux and a rotor which is rotatable through 180° when current in a given direction is supplied to said coil and which by reason of its inertia overruns the 180° point and then returns toward said point, a power source for said motor, means providing a standard time signal, a motor circuit including means controlling the supply of current from said power source to said coil and the direction of said current comprising a NAND circuit having one input connected with said time signal means and a flip-flop circuit having an input connected with the output of said NAND circuit and operable by an input signal from said time signal means to supply current to said coil in a predetermined direction to rotate said rotor, a counting circuit having two output terminals providing different counts, means responsive to a predetermined current through said coil to initiate the counting of said counting circuit, a selecting circuit for selectively transmitting the output of one or the other of said output terminals of said counting circuit to another input of said NAND circuit to reverse said flip-flop circuit, and manually operable means controlling the operation of said selecting circuit and operable in one condition to transmit the output of one output terminal of said counting means to said NAND circuit to reverse the current in said coil when the rotor has turned 180° so as to continue rotation of said rotor in the same direction and operable in another condition to transmit the output of said other output terminal of said counting circuit to said NAND circuit to reverse the current in said coil when the rotor has overrun the 180° point and is returning to the neighborhood of 180° so as to drive the rotor in a reverse direction.

4,157,648

COMPOSITION AND METHOD FOR INFLATION OF PASSIVE RESTRAINT SYSTEMS

Richard L. Brennan, and George A. Lane, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 358,188, May 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 199,808, Nov. 17, 1971, abandoned. This application Jun. 12, 1975, Ser. No. 586,457
Int. Cl.[2] C06D *5/06*
U.S. Cl. 60—205 **11 Claims**

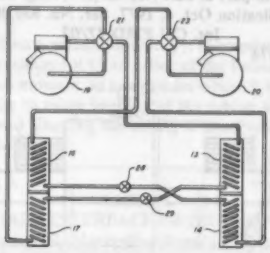
1. A method of rapidly generating nitrogen which comprises: igniting an intimate mixture of a metal azide of the formula AN_3 where A is lithium, sodium, potassium, rubidium, or cesium; and a metal halide selected from the group consisting of $SnCl_2$, $ZnBr_2$, $ZnCl_2$, and $TiCl_3$; said method being further defined in that the amount of metal halide employed is an amount sufficient to provide halogen in at least a stoichiometric ratio with the alkali metal so that the combustion products are substantially free of elemental alkali metal.

4,157,649

MULTIPLE COMPRESSOR HEAT PUMP WITH COORDINATED DEFROST

Rudy C. Bussjager, Syracuse, and James J. Del Toro, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 24, 1978, Ser. No. 889,695
Int. Cl.[2] F25B *41/00, 13/00, 7/00, 1/10*
U.S. Cl. 62—81 **15 Claims**



1. A heat pump system utilizing a refrigerant having first and second compressors operatively connected to first and second indoor heat exchangers providing heating and cooling to a conditiond region and first and second outdoor heat exchangers, first and second defrost means arranged to remove ice from the outdoor heat exchangers and thermostat means to actuate the compressors at the appropriate temperature levels, the improvement comprising:

a first defrost control circuit, which when energized during operation of the first compressor, activates the first defrost means to initiate a defrost cycle for the first outdoor heat exchanger operatively connected to the first compressor and which effects starting of the second compressor independent of the temperature within the conditioned region;

a second defrost control circuit which when energized activates the second defrost means to initiate a defrost cycle for the second outdoor heat exchanger operatively connected to the second compressor;

first contact means connected to the first defrost control circuit to prevent the initiation of a defrost cycle when the second defrost control circuit is in a defrost cycle; and

second contact means connected to the second defrost control circuit to prevent the initiation of a defrost cycle when the first defrost circuit is in a defrost cycle.

12. A method of operating a multiple compressor heat pump system having multiple compressors, multiple outdoor heat exchangers and multiple indoor heat exchangers operatively connected with the compressors, multiple defrost means for the appropriate outdoor heat exchangers, multiple fans associated with the appropriate heat exchangers and multiple reversing valves for changing the refrigerant flow direction within the heat pump operatively associated with each compressor and thermostat means for initiating compressor operation at the appropriate temperature levels, comprising the steps of:

selecting the appropriate mode of operation and number of compressors to be operated as a function of the desired system operation;

energizing a first compressor to transfer heat between a first indoor heat exchanger and a first outdoor heat exchanger under the appropriate loading conditions;

energizing a second compressor to transfer heat from a

second outdoor heat exchanger to a second indoor heat exchanger when a first defrost means for the first outdoor heat exchanger is energized;

energizing both the first and second compressors to transfer heat between the first and second outdoor heat exchangers and the first and second indoor heat exchangers under the appropriate loading conditions;

de-energizing a second defrost means associated with the second compressor when the first defrost means associated with the first compressor is energized; and

de-energizing the first defrost means associated with the first compressor when the second defrost means associated with the second compressor is energized.

4,157,650

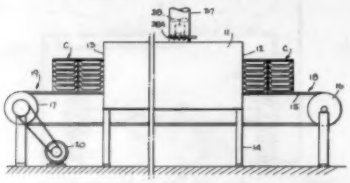
CRYOGENIC RAPID FOOD COOLING MACHINE

Raul Guibert, 8343 W. 4th St., Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 825,037, Aug. 16, 1977. This application Oct. 4, 1977, Ser. No. 839,386

Int. Cl.[2] F25D *17/02*

U.S. Cl. 62—374 **11 Claims**



1. A cryogenic machine for rapidly cooling cartridges, each formed by a vertical stack of trays which are spaced from each other and nested within an open carton whose walls have holes therein, the trays having cooked meals sealed therein, said machine comprising:

A. a tunnel having an inlet and an outlet;

B. a conveyor to continuously transport two parallel trains of said cartridges from the inlet to the outlet of said tunnel, the space between said trains being bordered by the carton walls and defining a center aisle in said tunnel and the spaces between the opposing sides of the tunnel and the open sides of the cartons defining outer aisles;

C. partition assemblies mounted in said aisles to divide the tunnel into inlet and outlet stages, a main cooling stage adjacent the outlet stage and a succession of pre-cooling stages between the main cooling stage and the inlet stage;

D. means in said main cooling stage to feed a liquid cryogenic agent therein which is volatilized by the food passing therethrough to produce a cold gas; and

E. fan means to draw the cold gas from said main cooling stage and to direct it in a circuitous path through said succession of pre-cooling stages, said path in each pre-cooling stage running through the spaces between the trays in said cartridges between the center aisle and the outer aisles.

4,157,651

METHOD AND MEANS FOR SEPARATELY COLLECTING CLOSED TOE STOCKINGS AND WASTE THEREFROM

Sherrill B. Coggins; James R. Lewis, both of Winston-Salem, and Orlice A. Speas, Rural Hall, all of N.C., assignors to Speizman Industries, Charlotte, N.C.

Filed Apr. 27, 1977, Ser. No. 791,340

Int. Cl.[2] D04B *35/34, 15/92*

U.S. Cl. 66—147 **6 Claims**

1. A method of separating and collecting stockings and waste fabric severed therefrom, the stockings having thermoplastic toe portions, comprising:

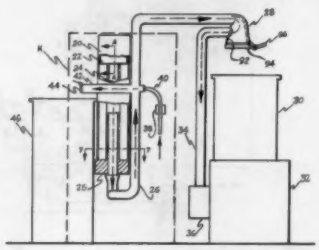
(a) clamping a stocking at the toe portion thereof laterally in radial constriction immediately after the knitting thereof on a circular knitting machine, with the stocking depending from said toe portion and said waste fabric disposed thereabove, by closing constriction clamps;

(b) severing said toe portion from said waste fabric at said constriction with a heated blade that closes said toe portion by heat setting;

(c) partially opening said clamps to release said closed toe stocking while retaining said waste fabric thereat;

(d) transporting said closed toe stocking directly from said clamps through a conduit to a stocking collection location by means of a first suction draft through said conduit;

(e) fully opening said clamps to release said waste fabric; and



(f) transporting said waste fabric directly from said clamps through a portion of said conduit and to a waste collection station by air means, said transporting through said portion of said conduit including applying a second suction draft, of said air means, therethrough and said transporting to said waste collection station including directing air of said air means laterally of said conduit through a lateral outlet therefrom disposed intermediate said clamps and said collection location for discharging said waste fabric from said conduit through said outlet to said waste collection station, said second suction draft being applied to said conduit at said outlet.

4,157,652

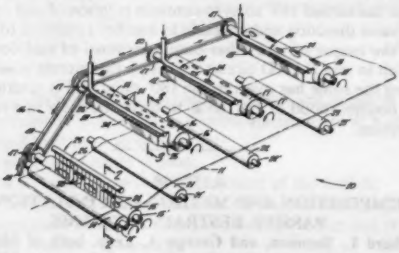
CONTINUOUS, RANDOM DYEING APPARATUS FOR CARPET OR THE LIKE

Donald R. Mathes, 9902 Dewey Dr., Garden Grove, Calif. 92641, and Ramon M. Navarro, 19052 E. Center, Orange, Calif. 92669

Filed Mar. 30, 1978, Ser. No. 891,910

Int. Cl.[2] D06B *1/02, 11/00*

U.S. Cl. 68—22 B **19 Claims**



19. Apparatus for dispensing a liquid dye in a continuous and random pattern onto a moving web of carpet or the like comprising:

an elongate drum mounted for rotation on its axis and having a plurality of cavities extending partially thereinto from the outer surface thereof, said cavities being spaced along said outer surface of said drum in a generally irregular pattern;

wiper means engaging said outer surface longitudinally along one side of said drum;

means for rotating said drum in a direction such that said one side thereof moves downwardly;

means for conducting said dye to the intersection between said drum and said wiper means whereby said dye fills said cavities in said drum, on said one side thereof, as said drum rotates, said dye in said cavities passing below said wiper means and being dispensed below said drum in a continuous and random pattern; and

means for conducting a continuous web of carpet or the like beneath said drum for receipt of said dye dispensed thereby.

4,157,653

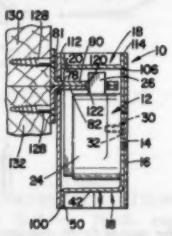
SHIELDED LOCK ASSEMBLY

John A. Dohanyos, 2711 Vestry Ave., Cleveland, Ohio 44113

Filed May 19, 1978, Ser. No. 907,827

Int. Cl.[2] E05B *63/00*

U.S. Cl. 70—417 **21 Claims**



1. A shielded lock assembly for a locking bracket, staple, or the like comprising in combination:

a deadbolt subassembly including a deadbolt subassembly body, deadbolt, and a key actuated operating mechanism including a lock cylinder for extending and retracting the deadbolt into and out of a locked position and an unlocked position;

a deadbolt subassembly retaining cage;

means to secure said deadbolt subassembly in said retaining cage such that said lock cylinder is accessible from the exterior of said retaining cage;

a lock assembly body defined by a front wall, back wall and interconnecting side walls, said walls together defining a substantially closed surface;

means to secure said retaining cage within said lock assembly body such that said lock cylinder is accessible from the exterior of said lock assembly body;

aperture means in said lock assembly body and said retaining cage adapted to receive at least one locking bracket or staple in locking alignment with said deadbolt;

closure means cooperating with said lock assembly body so as to define with said lock assembly body a substantial enclosure of said deadbolt subassembly.

4,157,654

TUBE FORMING PROCESS

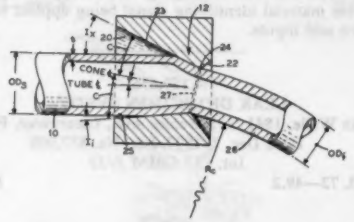
Kurt J. Kahlow, North Canton, and Richard L. Holbrook, Louisville, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,733

Int. Cl.[2] B21D *11/00*; B21C *3/00*

U.S. Cl. 72—367 **3 Claims**

1. A method of bending tubing in a die having a truncated cone shaped passage terminating in a throat, formed with a steep section and a shallow section directly opposite the steep section, and proportioned and arranged so that the maximum die inlet angle I_x is no greater than about 40° and the die tilt angle T is no greater than about 20° and greater than 0° and less than the cone angle C, where I_x is equal to C+T, T is the angle between the die centerline and the entering tubing centerline, C is the angle between the surface of the cone and the die centerline, the method comprising pushing the tubing through the die passage to subject it to circumferential swaging forces within the die, causing the tube to be reduced in outside diameter, varying from a maximum where it encounters the steepest section and to subject it to an offset of die forces producing a couple or force moment, to a minimum where it encounters the shallow section to cause bending of the tubing about the shallow section, and allowing the tubing to bend without restraint beyond the throat.



4,157,655

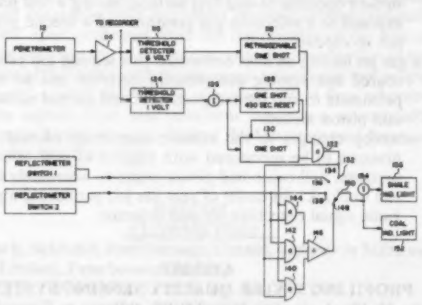
COAL-SHALE INTERFACE DETECTION SYSTEM

Richard A. Campbell, Huntsville; Jerry L. Hudgins, Guntersville; Paul W. Morris, Huntsville; Harry Reid, Jr., Huntsville, and Joe E. Zimmerman, Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 3, 1977, Ser. No. 848,421

Int. Cl.[2] G01N *3/30*

U.S. Cl. 73—12 **6 Claims**



1. A coal-shale interface detection system comprising:

an elongated ram;

a frame and bearing means supported by said frame for engaging and slidably constraining said ram for movement parallel to the longitudinal dimension of said ram;

a hard surfaced end on one end of said ram;

drive means for repeatedly reciprocally moving said ram along a line parallel to the longitudinal dimension of said ram;

accelerometer means coupled to said ram for providing an electrical output representative of the rate of change of velocity of said ram responsive to said hard surfaced end of said ram striking a material, and thereby the impact of the ram with a material;

at least one reflectometer supported by said frame and positioned adjacent to said ram for directing light generally toward a material to be identified and for providing an electrical output which differs with the quantity of light reflected back to said reflectometer;

circuit means responsive to signals from said accelerometer for providing a discrete output responsive to signals within a predetermined range of amplitudes and minimum duration; and

signal processing means having inputs connected to reflectometer and circuit means outputs for providing, selectively, a material identifying output responsive to a discrete material identifying signal being applied to at least two said inputs.

4,157,656

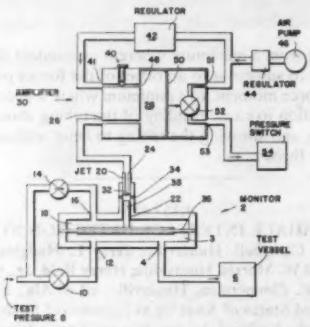
LEAK DETECTION SYSTEM

L. Irwin Walle, 1841 N. Hercules Ave., Clearwater, Fla. 33515

Filed Dec. 2, 1977, Ser. No. 857,005

Int. Cl.[2] G01M *3/32*

U.S. Cl. 73—49.2 **17 Claims**



1. A fluid pressure monitor, comprising:

an axially displaceable piston means having a first surface exposed to a fluid pressure to be monitored and a second surface opposite to said first surface, having a first portion exposed to a reference gas pressure and a second portion not so exposed;

a gas jet having an inlet connected to a sensing gas pressure source and sensing gas pressure detector and an outlet proximate to said second portion of said second surface of said piston means:

whereby changes in the relative magnitude of said fluid pressure to be monitored with respect to said reference pressure, will cause said piston means to alternately block and unblock said outlet of said gas jet, producing a pneumatic signal detectible by said detector.

4,157,657

PROFILING WATER QUALITY SENSING SYSTEM

John H. Hinchman, San Diego, Calif., assignor to General Dynamics Electronics Division, San Diego, Calif.

Filed Oct. 13, 1977, Ser. No. 841,680

Int. Cl.[2] G01N *33/18;* **B66C** *23/60*

U.S. Cl. 73—53 **15 Claims**

1. A system for obtaining a vertical profile of water quality in a body of water, comprising

sensing means for sensing predetermined characteristics of water;

a cable attached to the sensing means for holding the sensing means; and

a winch assembly having a drum for receiving the cable and for deploying and retrieving the cable and the sensing means in a body of water;

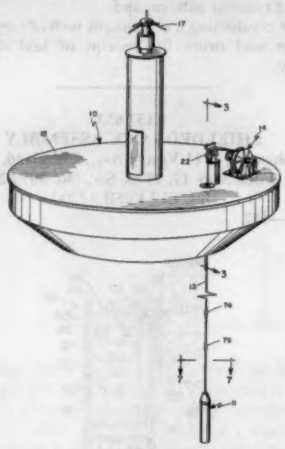
characterized by the winch assembly comprising

a DC motor coupled to the drum for driving the drum to retrieve the cable, and for generating electricity during deployment of the cable in response to the torque on the motor created by the cable and the sensing means during said deployment;

a helical reducer gear assembly for coupling mechanical power provided by the motor to the drum at a low speed and high torque;

an electromagnetically released brake coupled to the motor for braking the motor when the brake is not energized; and

a motor controller for coupling the motor and brake to a battery for providing constant voltage excitation of the motor and for controlling the brake; and including means



for inhibiting the motor from operating as a motor during deployment of the cable; and for causing the motor to generate electricity for recharging said battery during deployment of the cable, wherein the motor speed increases during said deployment only until the generated voltage equals the battery voltage, thereby causing the cable to be deployed thereafter at a speed governed by the speed-torque characteristics of the motor at the battery voltage.

4,157,658

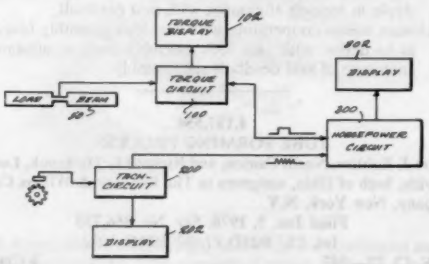
ENGINE HORSEPOWER MEASUREMENT SYSTEM

Karl R. Grice, Jr., Honea Path, S.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Filed Jan. 17, 1978, Ser. No. 870,249

Int. Cl.[2] G01M *15/00*

U.S. Cl. 73—133 R **11 Claims**



1. An apparatus for indicating the horsepower produced by a motor comprising:

a load beam adapted for being mounted on said motor to produce an output signal indicating the torque being produced by said motor;

torque circuit means connected to said load beam for pro-

ducing a window output pulse having a width indicating said torque;

speed means adapted for being mounted on said motor to produce an output signal indicating the speed of said motor in revolution per unit of time;

tachometer circuit means connected to said speed means for producing a pulse train with the frequency of said train indicating said speed;

horsepower circuit means connected to said tachometer and said torque circuit means for producing a signal indicating said horsepower including a counter means for counting said pulses and logic means connected to said counter means for causing said counter means to provide an output indicating the pulses counted during the time of said output pulse of said torque circuit means so as to indicate said horsepower,

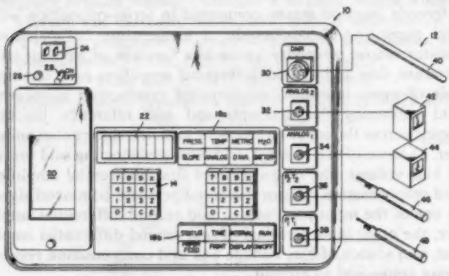
wherein said horsepower circuit further includes a variable frequency clock for producing a train of clock pulses, means for applying said clock pulses to said torque circuit means so that the width of said output pulse also varies in accordance with the frequency of said clock pulses, that frequency representing a constant.

4,157,659

OIL WELL INSTRUMENTATION SYSTEM

Douglas B. Murdock, Bellevue, Wash., assignor to Resource Control Corporation, Redmond, Wash.

Filed Feb. 27, 1978, Ser. No. 882,020
Int. Cl.[2] E21B *47/06*
U.S. Cl. 73—151 **9 Claims**



1. A system for measuring pressure in an oil well, comprising:

pressure transducer means for generating an electrical signal having a frequency which is a known function of the pressure received by said pressure transducer, said transducer being specially adapted for placement in said oil well;

processing means receiving said counter output signal for periodically calculating the pressure corresponding to said frequency according to said known function, and providing an output signal indicative of said pressure, said processing means repetitively performing said pressure calculation over a relatively long period of time with each pressure calculation requiring a relatively short period of time;

output means receiving the output of said processing means and providing an indication of said pressure for each measurement; and

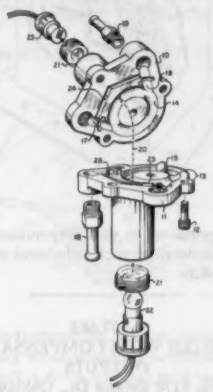
quiescent power means for removing power to portions of said system between said calculations.

4,157,660

DIGITAL FLOWMETER

George C. Spacek, Santa Barbara, Calif., assignor to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 550,416, Feb. 18, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,804
Int. Cl.[2] G01D *5/34*
U.S. Cl. 73—194 E **7 Claims**



1. A flowmeter for fluids comprising:

a body including a hollow torus having a cross section defining a toroidal path;

an inlet and outlet connected to the perimeter of the interior of the torus in opposed tangential relationship;

a single ball disposed in the torus and having a lesser diameter than the inside dimension of the torus cross section so that it moves freely along the toroidal path; and

detection means for generating an electrical signal whenever the ball passes a given point in the toroidal path, wherein said tangential inlet and outlet are spaced approximately 180° apart measured from the intersection of the axis of the inlet and the axis of the torus to the intersection of the axis of the outlet with the torus axis causing the ball to spin freely around the torus in response to fluid flow whereby the signals from said detection means are substantially linearly related to the flow of fluid through said flowmeter at low flow rates.

4,157,661

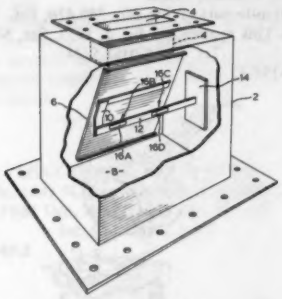
FLOWMETERS

Milton R. Schindel, Peterborough, Canada, assignor to Milltronics Limited, Peterborough, Canada

Filed Mar. 7, 1978, Ser. No. 884,755
Int. Cl.[2] G01F *1/30*
U.S. Cl. 73—228 **8 Claims**

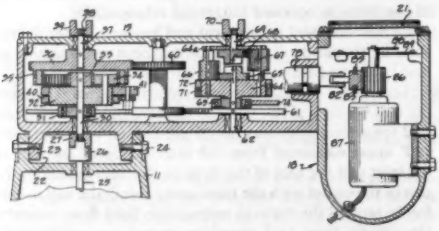
1. A flowmeter for particulate solids comprising a housing defining an entrance for a stream of particulate material, at least one plate situated in the housing downstream of the entrance so as to deflect the stream of material passing through the opening, the at least one plate being inclined relative to the direction of flow of said material through said entrance so as to sustain a reaction force having a component perpendicular to said flow direction, means supporting the at least one plate comprising at least one cantilever extending between said at least one plate and location fixed in relation to said housing so as to sustain said perpendicular reaction force component, each such cantilever extending perpendicularly relative to said force component, a transducer system comprising strain gauges mounted on said at least one cantilever in two longitudinally spaced pairs, the gauges in each pair being at opposite sides of the cantilever with respect to the direction of said perpendicular component, said gauge pairs being individually responsive to bending strains in the beam caused by said perpendicular

force component and the gauges being electrically connected in a normally balanced bridge circuit such that imbalance of



the bridge is proportional to said perpendicular force component, and means to measure such imbalance and hence the rate of flow of said solids.

4,157,662
LIQUID METER WITH COMPENSATED DUAL OUTPUTS
Albert J. Granberg, 6178 Estates Dr., Oakland, Calif. 94611
Filed Mar. 10, 1978, Ser. No. 885,372
Int. Cl.[2] G01F *15/02*
U.S. Cl. 73—233 **4 Claims**



1. A dual registering meter with separate registering devices indicating both volume and weight respectively of the liquid passing through a meter casing means with an inlet and outlet and a positive displacement mechanism therebetween operable to respond to the actual volume of the liquid passing through said meter casing means with an output shaft driven proportionately to such volume comprising:

a compensator housing mounted on said meter casing means having an input shaft operably driven by the output shaft of said meter casing means;

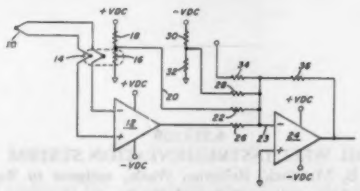
first compensating means within said compensator housing drivingly connected to said input shaft and having a transmission means, an adjusting means and an output, said adjusting means including a manual adjusting element and a temperature responsive element with the latter having communication with liquid passing through the meter casing being operable to incrementally vary said transmission means to cause said output to be compensated for volumetric error;

a first registering device connected to said output of said first compensating means and operable to indicate volumetric units passing through said meter casing means in response to said output;

second compensating means within said compensator housing drivingly connected to the output of said first compensating means, said second compensating means having a transmission means, an adjusting means and an output, said adjusting means being operably controlled to vary the transmission means in response to the density of a liquid passing through said meter casing means, said adjusting means including a density sensing means in communication with a liquid passing through said meter casing means which is operably connected to the adjusting means to vary the incremental adjustment to the transmission means; and

second registering means connected to the output of said second compensating means operable to indicate the weight of the liquid passing through said meter casing means, whereby both the volume and weight of the liquid passing through said meter casing means is obtainable from said several registering means.

4,157,663
AUTOMATIC THERMOCOUPLE REFERENCE JUNCTION COMPENSATOR
Eugene T. Ihlenfeldt, Enumclaw, and David E. Marshall, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Apr. 25, 1978, Ser. No. 899,957
Int. Cl.[2] G01K *7/12*
U.S. Cl. 73—361 **4 Claims**



1. Temperature measuring apparatus comprising a measuring thermocouple adapted to be placed in contact with an object whose temperature is to be measured, thermocouple reference junction means connected in series-opposition with said measuring thermocouple, a temperature compensation resistor whose resistivity varies as a function of ambient temperature, first and second differential amplifiers each having a pair of input terminals, ungrounded conductors connecting said measuring thermocouple and said reference junction means across the input terminals of said first differential amplifier, a source of bias voltage, and means connecting said source of bias voltage, the output of said first differential amplifier, said compensation resistor and a temperature command signal to one of the input terminals of said second differential amplifier, the other input terminal of said second differential amplifier, said source of bias voltage and said compensation resistor being connected to ground.

4,157,664
LIQUID SAMPLING DEVICE
Louise J. Robinson, 4120 Foxford Rd., Charlotte, N.C. 28215
Filed Oct. 2, 1978, Ser. No. 947,410
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R **13 Claims**

1. A sampling device for procuring a specimen of liquid from a remote location within a body of the liquid and comprising

a first receptacle having an open end;

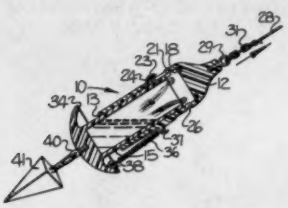
a second receptacle having an open end and disposed with respect to said first receptacle to define a closed container and for relative movement between an open position and closed position,

port means extending through the wall of at least one of said receptacles for ingress of exterior liquids and communicating with the interior of the container when said receptacles are in their open position and being shut when said receptacles are in their closed position;

means for attaching a line to the device and mounted to said first receptacle;

means for biasing said receptacles to their closed position; and

liquid resistance means for inducing a drag force on said second receptacle to cause said receptacles to move to



their open position against the resistance of said biasing means when said first receptacle is rapidly pulled through the liquid by the line and thereby to admit a specimen of the liquid into the closed container.

4,157,665

FORMATION OF ACOUSTICAL IMAGES

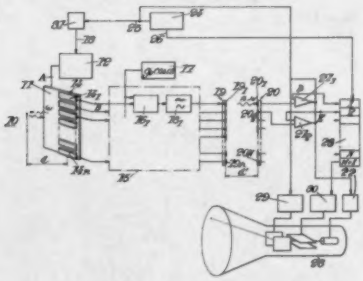
Edouard Bridoux, Maing; Christian D. Bruneel, Marly; Roger J. Torguet, and Bertrand Nongaillard, both of Saint-Saulve, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly Sur Seine, France

Filed Oct. 6, 1977, Ser. No. 839,979

Claims priority, application France, Oct. 11, 1976, 76 30476

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—607 **6 Claims**



1. A method for forming an image of an acoustic wave field originating from a target irradiated with pulses of acoustic energy at a frequency $\omega/2\pi$, comprising the steps of sampling said field by first receiving transducers distributed in an at least one-dimensional array, beating the electrical signals from said first receiving transducers with a reference signal at frequency $\Omega/2\pi$, Ω being greater than ω; electrically isolating and recovering the beat frequency signals at frequency $(\Omega-\omega)/2\pi$ to invert the phase of the sampled signals and applying the signals at frequency $(\Omega-\omega)/2\pi$ to an at least one dimensional array of transmitting transducers for reconstructing a real image creating acoustic field.

4,157,666

MOTION-TRANSMITTING ARRANGEMENT

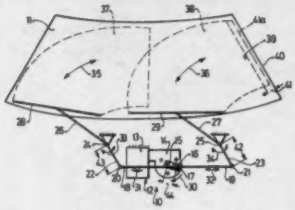
Eckhard Ursel, Bühl; Horst Seibicke, Bühl-Altschweier; Helmut Rech, Baden-Baden; Rolf Horcher, Bühlertal; Hans-Joachim Linhart, Ottersweier, and Erich Kolb, Bühl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,910

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1976, 2630067

Int. Cl.[2] B60S *1/08*; F16H *21/40*

U.S. Cl. 74—75 **7 Claims**



1. In a motion-transmitting arrangement, particularly in a windshield wiping arrangement, a combination comprising a rotary output shaft; a drive coupled with said output shaft for rotating the same in one direction; a crank member mounted on said output shaft for rotation therewith in said one direction and having a crank pin spaced from said output shaft by a first distance; a motion-transmitting linkage driven by said crank pin and including a member which is pivotable on two pivots spaced from one another by a second distance, one of said pivots having a pivot pin; a movable element operatively connected with said member to perform movements in response to pivoting of said member; and means for varying at least one of said distances to thereby adjust the movement performed by said movable element.

4,157,667

VARIABLE RATIO DRIVE FOR GEARING ROTATING PARTS TO ONE ANOTHER UTILIZABLE FOR CYCLES, MOTORCYCLES, MOTOR VEHICLES AND MACHINES IN GENERAL

Giovanna Rinaldi, Via Gozzano 40, San Terenzo (La Spezia), Italy

Filed Sep. 19, 1977, Ser. No. 834,310

Claims priority, application Italy, Oct. 4, 1976, 27978 A/76; Oct. 4, 1976, 27979 A/76; Dec. 31, 1976, 31068 A/76; Feb. 8, 1977, 20042 A/77

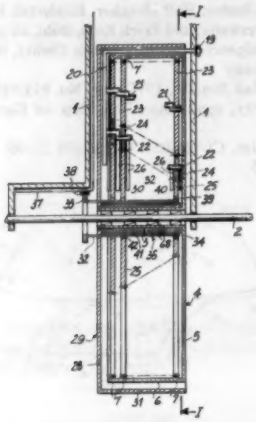
Int. Cl.[2] F16H *3/44*

U.S. Cl. 74—750 B **13 Claims**

1. A variable ratio drive for gearing rotating parts to one another, essential features of which are that it comprises:

a bell shaped drive member with internal cogging, carried in axial rotation by the rotating drive unit; a plurality of kinematic gear chains engaging with the teeth in the inside of the said drive member, placed parallel to one another transversely to the axis of rotation of the said drive member in such a way as to convert the rotary motion of the latter into variable ratio motion at various speeds of the corresponding gearwheels arranged coaxially to the inside of the said drive member; a driven member able to rotate

around the axes of said gearwheels and said drive member, and enabled to be coupled for rotation to a rotating driven



unit; and suitable means for selectively coupling the said gearwheels to suit the desired gear ratio.

4,157,668

PLANETARY GEARING WITH FLEXIBLE FRICTION SURFACES

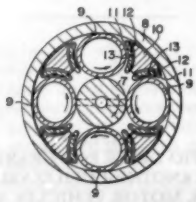
Nobuo Fukuma, Toyota, and Yoshito Katou, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jan. 5, 1977, Ser. No. 756,965

Claims priority, application Japan, Nov. 1, 1976, 51-131534; Nov. 1, 1976, 51-131535

Int. Cl.² F16H *13/06*

U.S. Cl. 74—798 **23 Claims**



1. A lubricated friction speed change gearing comprising a housing, first and second rotary shafts rotatably supported in said housing on collinear axes, an inner race supported by said first rotary shaft, an outer race supported by said housing to be coaxial with said inner race, a plurality of cylindrical rollers mounted between said inner and outer races and compressed and elastically deformed therebetween, and a spider member supported by said second rotary shaft to engage among said rollers in sliding contact therewith and arranged to drive or to be driven by said rollers when they perform planetary movement, said spider member having bearing shoes at its bearing portions where it contacts said rollers, the major portion of each of said shoes being capable of slight displacement relative to the body of said spider member so as to form a gap capable of changing its shape between said portion of said shoe and the one of said rollers with which said shoe is in contact, so that the lubricant cushion is adapted to a wide range of operating conditions.

4,157,669

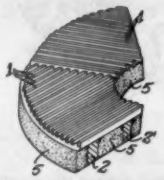
METHOD TO MANUFACTURE COMMINUTING DISCS FOR WOOD PULP REFINING MACHINES

Milton Pilão, Sao Paulo, Brazil, assignor to Pilao S/A Maquinas E Equipamentos, Sao Paulo, Brazil

Filed Oct. 12, 1977, Ser. No. 841,461

Int. Cl.² B21K *21/00*

U.S. Cl. 76—101 A **2 Claims**



1. A method of making a comminutor plate, particularly for pulp refining machines, comprising the steps of arranging at least two separate annular support members concentric to each other and with radial spacing from each other, so that at least one edge face of the one support member is located in a common plane with a similar edge face of the other support member; arranging a set of elongated strip-shaped blades in said plane in a predetermined relative distribution so that said blades extend over and across said support member being supported thereon and defining the comminuting surface of the comminutor plate; welding each of said support members to each of the blades along the respective surfaces thereof where the same engage the edge faces of the support members; introducing into the spacing between said support members a flowable solidifiable material so as to completely cover the welding spots between said support members and blades; and permitting said material to solidify, thus binding said two support members to each other in the radial space therebetween.

4,157,670

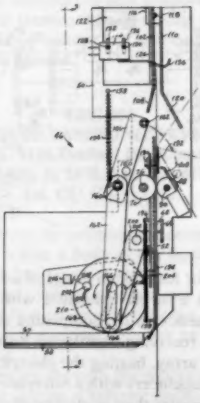
TICKET VENDING HEAD

Lloyd D. Herring, Jenison, Mich., assignor to Rowe International, Inc., Whippany, N.J.

Filed Jul. 27, 1977, Ser. No. 819,251

Int. Cl.² B65H *35/06*

U.S. Cl. 83—165 **19 Claims**



17. Apparatus for delivering tickets from a string of individual tickets separated by lines extending across said string including in combination, a blade having an edge, means mounting said blade for movement along a path between an inactive position and an active position, means for moving a string of

tickets past said blade along a path generally parallel to the path of movement of said blade, means for disabling said string moving means with one of said separating lines located beyond said blade edge in the direction of movement of said string and in the inactive position of said blade, means adapted to be activated sequentially to swing said folder bar across said ticket path and for moving said blade from said inactive position to said active position, coin-responsive means for activating said sequentially operating means and means responsive to operation of said sequentially operating means for actuating said string advancing means.

4,157,671

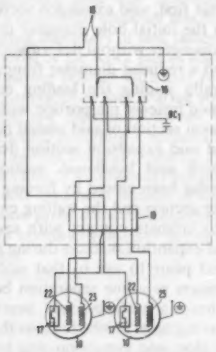
DRIVE FOR CUTTING ROLLERS OF PAPER SHREDDING OR CUTTING APPARATUS

Albert Goldhammer, Zum Hecht 46, 7773 Nussdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 665,959, Mar. 11, 1976, abandoned. This application Apr. 6, 1978, Ser. No. 893,871

Int. Cl.[2] **B23D** *19/04;* **B26D** *1/24;* **H02P** *7/74*

U.S. Cl. 83—492 **6 Claims**



1. In a drive for a paper cutting or shredding mechanism including two counter-rotating cutting rollers respectively having cutting knives thereon in cutting engagement with each other, said rollers being mounted in a frame for rotation about spaced, parallel, fixed axes, the improvement comprising: two alternating current motors coupled in parallel across a source of alternating current, said motors having substantially identical speed-torque characteristics, and gearing means drivingly connecting each motor to a respective roller for independently driving the same whereby an overload condition on one roller and its respective motor results in equalizing the load between both motors.

4,157,672

HIGH BULK SLITTER

Kenneth G. Frye, Lee, Mass., assignor to Lenox Machine Company, Inc., Lenox, Mass.

Filed Jun. 27, 1977, Ser. No. 810,575

Int. Cl.[2] **B23D** *19/06*

U.S. Cl. 83—500 **4 Claims**

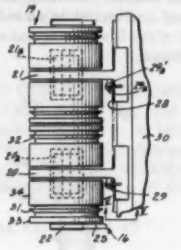
1. A high bulk traveling web paper slitter for slitting a web unit having a single layer or multiple layers of paper web forming a continuous slit to divide the web into narrower sheets comprising in combination:

unwinding means for supplying a traveling web to be slit in multiple lengths;

means for receiving the web after it has been slit;

a slitter mechanism between the unwinding means and the receiving means and including rotary drum units rotatably supported on an axis extending transversely of the direction of travel of the web with each rotary drum unit having a plurality of annular sharp edged drum knives and an annular support surface band closely adjacent each of the knives being of substantially the same outer diameter as the knife;

a plurality of opposing slitter blades selectively positioned to coact with the drum knives;



and means for adjusting the position in an axial direction of each of the drums relative to each other to change the spacing between blades on respective drum units so that said blades can selectively engage different knives on the drums in different positions.

4,157,673

MOTOR SAW BLADE

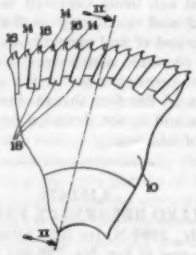
Mario Bruno, via Pettinengo 12, 10149 Turin, Italy

Filed Dec. 5, 1977, Ser. No. 857,092

Claims priority, application Italy, Jan. 14, 1977, 67081 A/77

Int. Cl.[2] **B23D** *45/02, 57/00;* **B27B** *33/02*

U.S. Cl. 83—837 **17 Claims**



1. In a motor saw blade formed of a metal blade having parallel opposed sides with unset saw teeth along at least one edge of the blade, the improvement comprising finishing saw teeth having ground centripetally tapering flanks and alternating with roughing saw teeth having a thickness considerably smaller than that of the finishing saw teeth and a height slightly greater than that of the finishing saw teeth, a recess on both sides of said roughing saw teeth providing for the smaller thickness of said roughing teeth, said smaller thickness of said roughing teeth being substantially uniform along the height of said roughing teeth.

4,157,674

COLLAR STUD FOR USE IN PLASTIC

Kenneth R. Carlson, and Arthur R. Fry, both of Rockford, Ill., assignors to Elco Industries, Inc., Rockford, Ill.

Filed Jan. 12, 1978, Ser. No. 868,994

Int. Cl.[2] **F16B** *27/00*

U.S. Cl. 85—1 R **3 Claims**

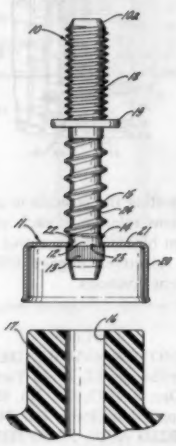
1. A collar stud assembly for attachment to a plastic boss having a bore therein, said stud assembly comprising:

a double-ended fastener having a single shank with a first thread suitable for threading into the bore of a plastic boss

on one end thereof and a second thread adapted to threadingly engage a member to be attached to the plastic boss on the other end of the shank,

a concentric collar on the shank of said fastener between the first and second threads for limiting the threading movement of the stud into the bore of the plastic boss,

the shank of said fastener extending beyond the outer end of the first thread and including an enlarged portion spaced from the end of the first thread and a raised ring at the end of the first thread,



and a metal cap adapted to fit over said plastic boss, the end wall of said cap being captured between said enlarged portion and said raised ring so that the top of the cap engages the end of said plastic boss,

said end wall provided with a circular opening dimensioned so that said opening rides in the grooves between the raised helix of the first thread during threading of the plastic boss and is not threaded or enlarged during the threading of said boss.

4,157,675

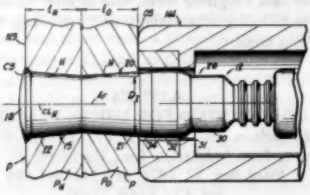
FILLED BREAKNECK FASTENER

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 779,802, Mar. 21, 1977, and a continuation-in-part of Ser. No. 673,423, Apr. 5, 1976, Pat. No. 4,054,045, and a continuation-in-part of Ser. No. 694,145, Jun. 9, 1976, abandoned, which is a division of Ser. No. 542,076, Jan. 17, 1975, Pat. No. 3,962,775, said Ser. No. 779,802, is a division of Ser. No. 554,762, Mar. 3, 1975, Pat. No. 4,012,885, said Ser. No. 673,423, is a continuation of Ser. No. 542,077, Jan. 17, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,194

Int. Cl.[2] **F16B** *19/00*

U.S. Cl. 85—5 R **13 Claims**



1. A fastener with a central axis for connecting work pieces with aligned holes therethrough of an initial diameter comprising:

a fastener pin portion including an elongate bearing section having a leading end and a trailing end adapted to extend through the holes and an enlarged head integral with the trailing end of said bearing section adapted to engage one side of the work pieces about the holes, said bearing section defining an exterior bearing surface thereon concentric about the fastener central axis and tapering inwardly along said bearing section from a leading major bearing diameter adjacent the leading end of said bearing section larger than the initial diameter of the holes in the work pieces to a trailing minor bearing diameter trailing said leading major bearing diameter and smaller than said leading major bearing diameter; and,

a pintail portion integrally connected to the leading end of said bearing section of said fastener pin portion and coaxial therewith, said pintail portion including an expansion section defining an expansion surface thereon having a leading minor expansion diameter at least as small as the initial hole diameter and a major expansion diameter larger than the leading major bearing diameter of said bearing surface trailing the leading minor expansion diameter so that, when said expansion section on said pintail portion is forced through the holes, leading minor expansion diameter first, said expansion section will expand the holes from the initial hole diameter to the trailing major expansion diameter without deformation of said expansion section; and a reduced diameter frangible breakneck section integrally joining the leading end of said bearing section of said fastener pin portion with the trailing end of said expansion section of said pintail portion, said bearing section and said expansion section defining a breakneck groove about said breakneck section, said breakneck groove having been closed by forcing the leading end of said bearing section and the trailing end of said expansion section into intimate contact with each other about the bearing and expansion surfaces during manufacture of said fastener and prior to use so that said closed breakneck groove appears as a line separation between said expansion and bearing surfaces, said bearing and expansion surfaces having been finished across the closed breakneck groove so that said expansion and bearing surfaces are essentially continuous across the closed breakneck groove to prevent any material of the work pieces about the holes from being removed in the closed breakneck groove as the closed breakneck groove passes through the holes while under expansion.

11. A fastener with a central axis for connecting work pieces with aligned holes therethrough of an initial diameter while simultaneously coldworking the material of the work pieces about the holes where the work pieces have a common interface about the holes comprising:

a fastener pin portion including an elongate bearing section having a central axis and adapted to extend through the holes, and an enlarged head integral with the trailing end of said bearing section adapted to engage one side of the work pieces about the holes, said bearing section defining an exterior bearing surface thereon concentric about the fastener central axis, said bearing section having a length sufficient to extend through the holes when said fastener pin portion is installed with said head engaging one side of the work pieces, said bearing surface comprising a leading reverse taper subsurface and a trailing forward taper subsurface, said reverse taper subsurface and said forward taper subsurface defining a common juncture therebetween oriented generally normal to the fastener pin portion central axis, said reverse taper and forward taper subsurfaces sized so that said juncture is located substantially in registration with the interface between the work pieces about the holes when said fastener pin portion is installed in the holes, said reverse taper subsurface tapering inwardly along said bearing section from a leading major bearing diameter adjacent the leading end of said bearing section larger than the initial diameter of the holes in the work pieces to a trailing minor bearing diameter at said juncture trailing said leading major bearing diameter

and smaller than said leading major bearing diameter by a first prescribed amount, and said forward taper subsurface tapering outwardly along said bearing section from the trailing minor bearing diameter at said juncture to a trailing major diameter at said head larger than the initial diameter of the holes; and

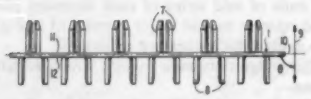
a pintail portion integrally connected to the leading end of said bearing section of said fastener pin portion and having a central axis coaxial with the central axis of said fastener pin portion, said pintail portion including an expansion section defining an expansion surface on the leading portion thereof having a leading minor expansion diameter at least as small as the initial hole diameter and a trailing major expansion diameter larger than the leading major bearing diameter of said bearing surface and the initial diameter of the holes so that the expansion section nonelastically expands the material of the work pieces about the holes as the expansion section is forced therethrough to coldwork the material of the work pieces about the holes, the major expansion diameter selected to nonelastically expand the material of the work pieces about the holes so that the non-elastically expanded material of the work pieces recovers after the non-elastic expansion thereof toward a recovered diameter less than the leading and trailing bearing diameters of said fastener pin portion to cause the material of the work pieces about the holes to be forced into bearing contact with said reverse and forward tapered subsurfaces on said bearing section whereby said work pieces are constantly forced together, said pintail portion further including a reduced diameter frangible breakneck section integrally joining the leading end of said bearing section of said fastener pin portion with the trailing end of said expansion section of said pintail portion, said expansion surface and said bearing surface forming an essentially continuous surface across said frangible breakneck section.

4,157,676

LAP-JOINT FASTENER

John C. Jureit, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Sep. 30, 1977, Ser. No. 838,292
Int. Cl.² E04B 1/38
U.S. Cl. 85—13 **6 Claims**



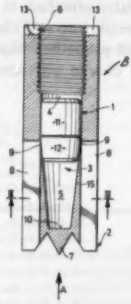
1. A fastener for and capable of itself forming lap-type joints between nailable members comprising, a planar sheet metal plate, a plurality of teeth integral with and struck from the plate to leave a plurality of rows of substantially parallel slots which have longitudinal dimensions in the direction of the rows which are greater than the transverse dimension thereof, three teeth being struck from each slot and projecting in a substantially perpendicular direction from the plane of the plate, a first portion of the said teeth being struck from the centers of said slots and projecting from one side of the plate to form rows of single teeth and a second portion of the said teeth struck from the sides of said slots and projecting from the other side of the plate to form rows of pairs of teeth, said single teeth being wider than said pairs of teeth and all of said teeth having a length greater than their width, the single tooth and the two paired teeth projecting from the other side of the plate forming respectively rows of single teeth and rows of pairs of teeth, the single tooth and the two paired teeth projecting from the same longitudinal side of the slot from which they are struck whereby the single tooth and the pair of paired teeth associated with a slot are disposed adjacent to but not in a single plane, the ends of the single teeth having surfaces such that upon movement of the single teeth into a nailable member the single teeth remain in the said substantially perpendicular direction, the ends of the paired teeth having surfaces such that upon movement of the paired teeth into a nailable member the paired teeth are displaceable from the said substantially perpendicular direction whereby portions of the nailable member may be clenched between adjacent paired teeth.

4,157,677

SELF-DRILLING DOWEL WITH DRILL HEAD

Paul Deutschenbaur, Unterpfaffenhofen, and Wolfgang Lippacher, Breitbrunn, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 26, 1977, Ser. No. 845,662
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1976, 2650598
Int. Cl.² E04B 1/49
U.S. Cl. 85—68 **13 Claims**



1. A self-drilling dowel comprising an axially extending rod-like member having a leading end arranged to be placed against a target material for drilling a borehole in the material and an oppositely directed trailing end, a drill head formed on the leading end of said member, elongated slots formed in said member and extending from the leading end toward the trailing end thereof, an axially extending central bore in said member having an axially extending cylindrically shaped first part extending from the trailing end for a portion of the axial length of said member and an axially extending second part extending from the end of said first part spaced from the trailing end and the surface of said second part tapering inwardly from the surface of the cylindrically shaped first part in the direction toward the leading end, an axially extending spreader member positionable within said central bore and having an axially extending first part and an axially extending second part with said second part of said spreader member having a tapering surface complementary to the surface of said second part of said central bore, said rod-like member having debris removing means for the removal of drilled material from the borehole, wherein the improvement comprises that said central bore is a blind bore being closed at the leading end of said rod-like member by said drill head with said drill head extending transversely across the full extent of the leading end of said rod-like member.

4,157,678

RAMMER DEVICE

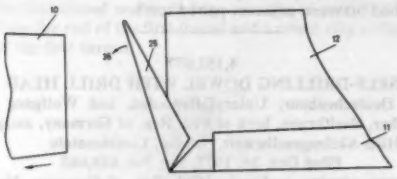
K. Sten R. Hultgren, and J. P. Göran Sundmar, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Mar. 16, 1977, Ser. No. 778,287
Claims priority, application Sweden, Mar. 31, 1976, 7603849
Int. Cl.² F41F 17/16
U.S. Cl. 89—47 **9 Claims**

1. A ram assembly for properly positioning both a projectile and its propellant charge within a chamber of a firearm having a rifled barrel, comprising:

a rammer head assembly pivotally attached to said firearm and having a curved shape to support said propellant charge;

said rammer head assembly being pivotable into an aligned position proximate to a rear end of a projectile aligned with said chamber;



drive means for moving said rammer head assembly and said propellant charge toward said chamber; and

cover means pivotally attached to said rammer head for driving said projectile into said chamber and for retarding the motion of said propellant charge to reduce the force with which said charge contacts said projectile in said chamber.

4,157,679

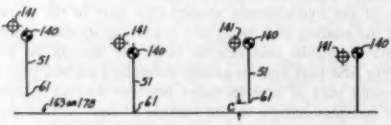
METHOD OF CYCLING A DISTENSIBLE TRACER STYLUS RELATIVE TO A PATTERN AND TO A WORKPIECE

Robert H. Wenzel, Orange, Calif., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 635,243, Nov. 25, 1975, Pat. No. 4,064,445, which is a division of Ser. No. 415,018, Mar. 26, 1974, Pat. No. 3,976,928. This application Sep. 1, 1977, Ser. No. 829,736

Int. Cl.[2] *B23C 1/16; B23D 1/30;* **B24B** *17/10;* **G05B** *17/02*

U.S. Cl. 409—99 **5 Claims**



1. The method of cycling a distensible tracer stylus relative to a pattern and a workpiece, comprising: driving the stylus across the pattern in a selected tracing plane to make a trace cut; at the end of the trace cut retracting the tracer stylus from the template; at the end of the retraction moving the tracer stylus in pick feed motion laterally relative to the cutting plane; at the end of the pick feed movement traversing the pattern in a direction reverse to that of the trace cut, with the stylus out of contact with the pattern to return the stylus to a position above the starting point of a next trace cut; distending the tracer stylus; then causing the stylus to approach the pattern at a selected rate until the stylus reaches a predetermined point; then re-retracting the stylus from its distended condition; then causing the stylus to approach the pattern at a lesser rate until it reaches a predetermined position; then terminating the approach movement; and then starting another trace cut parallel to and spaced from the first trace cut.

4,157,680

DRAINAGE PLATES

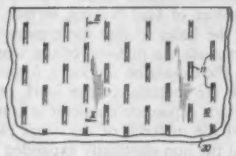
George K. Charles, London, England, assignor to Wincanton Engineering Limited, London, England

Filed Apr. 2, 1976, Ser. No. 672,954

Claims priority, application United Kingdom, Apr. 4, 1975, 14001/75

Int. Cl.[2] **A01J** *25/11, 11/06*

U.S. Cl. 99—454 **3 Claims**



1. In a cheese mold comprising an external casing fitted internally with a lining which defines a mold cavity of substantially constant transverse cross section along the length of the mold to permit a block of cheese curd to slide out of the mold after compression therein, the lining including drainage plates each comprising a given plate having a major portion thereof in a plane and having punched portions thereof out of the plane to the side thereof adjacent the casing to form parallel strips having ends which are integral with said major portion of said given plate and center portions which are spaced from said major portion of said given plate to form drainage slots between said major portion of said given plate and side edges of said center portions of said strips, said drainage plates being arranged with the parallel strips aligned along the length of the mold and in contact with the external casing whereby said major portions of the drainage plates cooperate with the external casing to form passages for drainage of whey pressed out of the curd; and

means for reducing the force required to displace said block of curd in said mold to less than that which causes extrusion of the curd through said drainage slots, wherein

(a) the ends of said strips of each drainage plate are inclined relative to said major portion of said given plate at an angle which does not exceed 30°

(b) said drainage slots have a width which does not exceed 0.6 mm

(c) said strips each define a recessed surface having a radius of curvature which is not less than 1 mm.

4,157,681

MACHINE FOR PARING VEGETABLES OR FRUITS

Yngve R. Akesson, Hälsingborg, and Bror F. Lundgren, Bjuv, both of Sweden, assignors to Produits Findus S.A., Vevey, Switzerland

Filed Nov. 25, 1977, Ser. No. 854,634

Claims priority, application Switzerland, Nov. 29, 1976, 14979/76

Int. Cl.[2] **A47J** *23/00*

U.S. Cl. 99—538 **8 Claims**

1. A machine for paring products such as vegetables, fruits or parts thereof having as their base a central portion to be separated over a hemispherical or ogival surface from the surrounding portion, said machine comprising

a tray which is provided with one or more recesses in which the product can be received,

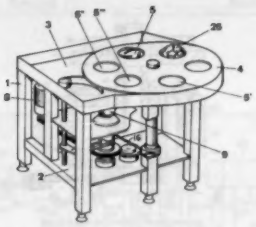
means for supporting said tray for rotation about a fixed axis, said recess being adapted to hold said product in a position in which its major axis is parallel to said fixed axis,

means for intermittently rotating said tray to move said recess from a product receiving station to a paring station,

a curved paring blade,

means for effecting relative rotation between said paring blade and said product when the latter is positioned at the paring station to separate said hemispherical or ogival surface from said surrounding portion,

means for advancing said paring blade into said recess and out of said recess, said means including a rod engageable with said paring blade and moveable along an axis codirectional with that of said product major axis whereby said paring blade moves between advanced and retracted position in an arc convex in relation to said major axis, and



means for adjusting the length of paring blade advance into said recess, said adjusting means including a lever supported for pivoting movement, said paring blade being connected to said lever, a second rod strokable in opposite directions along an axis parallel to said major axis, linkage connected with said lever, said second rod being engageable with said linkage, and a differential cam connected with said second rod for controlling the stroke thereof.

4,157,682

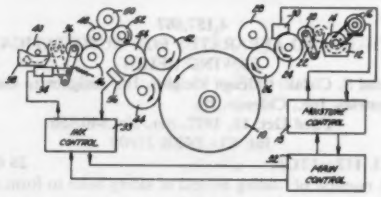
INK AND MOISTURE CONTROL SYSTEM WITH RUN-LENGTH COMPENSATION

Saied A.-E. Mabrouk, Macedonia; Edward T. Morgan, Mentor, and James W. Davis, Bedford, all of Ohio, assignors to AM International, Inc., Los Angeles, Calif.

Filed Aug. 1, 1977, Ser. No. 820,823

Int. Cl.[2] B41L *25/12, 27/14;* B41F *7/26*

U.S. Cl. 101—148 **11 Claims**



1. In a lithographic duplicator for printing copies from a sequence of premoistened masters, each inserted in turn on a master cylinder of the duplicator, which duplicator includes moisture supply means for supplying moisture to a master on the cylinder and ink supply means for supplying ink to a master on the cylinder, the control system comprising:

moisture control means for providing an underlying moisture feed rate control signal, said control means being connected with the moisture supply means and controlling the same via said signal,

means for providing signals indicative of the insertions of new masters on the master cylinder, and

circuit means connected with said last-named means to receive the signals therefrom, said circuit means processing said last-named signals to generate a resultant compensation signal indicative of anticipated moisture level conditions at the master due to the cumulative effect of providing premoistened masters to the master cylinder, and being connected with said control means for transmitting said compensation signal thereto,

said moisture control means being responsive to said compensation signal to adjust the moisture feed rate control signal delivered by it to said moisture supply means in a manner to reduce the moisture feed rate of the moisture supplying means under conditions at high frequency introduction of new masters to the master cylinder to compensate at least partially for the increased moisture introduced thereby.

4,157,683

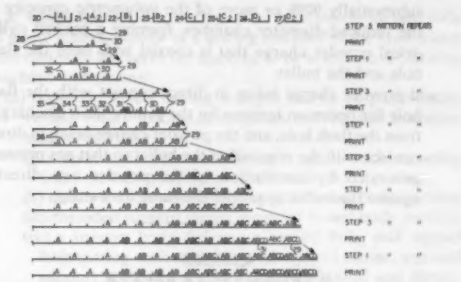
PRINTING SYSTEM

Alan H. Norris, Rome, Ga., assignor to WWG Industries, Inc., Rome, Ga.

Filed Sep. 3, 1975, Ser. No. 609,938

Int. Cl.[2] B41F *1/10, 15/10*

U.S. Cl. 101—211 **1 Claim**



1. A method of printing a repetitive multicolor pattern on a long continuous fabric web using a printing apparatus of a type having means for longitudinally moving the web through the machine in increments and for stopping the web for printing between incremental movements, and having a plurality of printing stations operable to print a portion of the pattern on the web while the web is stopped, each station being adapted to print in a single color; the stations being uniformly spaced apart by distances equal to the longitudinal repeat length of each pattern, the method comprising

selecting the total number P of printing stations and the number N of stations for printing each color so that $N=P/n$. where n is the number of different colors to be printed in the pattern;

arranging the colors assigned to the printing stations so that all stations for printing the same color follow one another in sequence, the number of stations for each color being greater than 1;

moving the fabric longitudinally for a distance D_1 between two successive printing operations and for a distance D_2 between the next two successive printing operations where D_1 and D_2 are each equal to integral odd numbers of pattern repeat lengths and $D_1+D_2=2N$, wherein N is an odd number and $D_1=D_2=N$.

4,157,684

SAFETY FILLER FOR UNDERLOADED FIREARM CARTRIDGE

Karl C. Clausser, 695 LaCadena Dr., Riverside, Calif. 92501

Continuation-in-part of Ser. No. 615,929, Sep. 23, 1975, abandoned. This application Mar. 24, 1977, Ser. No. 780,796

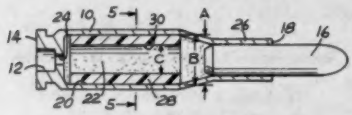
Int. Cl.[2] F42B *5/22*

U.S. Cl. 102—38 R **2 Claims**

1. A reusable safety filler for use in an underloaded firearm cartridge of the type having a cylindrical case with a powder chamber and a necked-down front end portion into which a bullet is inserted, said case having a primer flash hole centered

at the rear end thereof, and a powder charge contained within said powder chamber, said powder charge having a volume substantially less than about 90% of the full volumetric capacity of the case, said safety filler comprising:

an open-end tubular insert of a pliable material that is resistant to the combustion of the powder charge and can be contracted in diameter so as to allow it to be inserted through said necked-down portion into the powder chamber of the cartridge case, where it expands to lie against the inner surface of the powder chamber, said insert serving as a space filler and providing a central, reduced-



volume powder chamber in which the powder is loaded to substantially 90% or more of the volumetric capacity of the reduced-diameter chamber, forming a packed cylindrical powder charge that is coaxial with both the flash hole and the bullet;

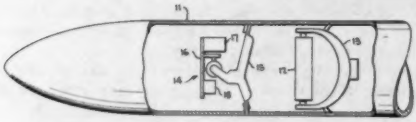
said powder charge being in direct contact with the flash hole for optimum ignition by the primer flash discharged from the flash hole, and the powder charge being in direct contact with the rear end of the bullet so that gas pressure generated by combustion of the powder acts directly against the bullet to propel the same forwardly.

4,157,685

WARHEAD FUZE SEEKER

Harry L. Gerwin, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1965, Ser. No. 507,639
Int. Cl.[2] F42C *13/04*
U.S. Cl. 102—214 **2 Claims**



1. In a medium range interceptor missile for deployment against air supported targets, said missile having a directional blast fragmentation warhead fuze seeker system comprising a gimbaled system for supporting and positioning the warhead within the nose section of the missile and a proximity fuze seeker system which senses the intended target, controls the gimbaled system through a servo system whereby the axis of the fragmentation blast pattern of the warhead is aligned with the line-of-sight from the interceptor missile to the target, and fires the warhead when the interceptor missile is a predetermined distance from the target, the improvement comprising:

(a) a copper-plated, plastic foam waveguide antenna permanently mounted forward of the warhead and connected to the proximity fuze seeker system for radiating and receiving electromagnetic energy in the direction of the target, said antenna having a sufficiently low density as not to degrade the functional performance of the warhead thereby obviating the necessity of removing said antenna prior to firing the warhead, and

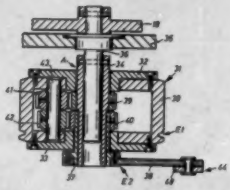
(b) the remaining high-density components of the proximity fuze seeker system being mounted aft of said warhead within the missile.

4,157,686

SEWING ASSEMBLY WITH A FEED DRIVE FOR A WORK HOLDER

Walter Hager, Kaiserslautern, and Richard Müller, Mehlbach, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,356
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733397; Apr. 26, 1978, 2818179
Int. Cl.[2] D05B *21/00*
U.S. Cl. 112—121.12 **10 Claims**



1. A sewing machine for sewing a pattern on a workpiece, comprising a housing, a rotatable main shaft rotatably mounted in said housing, a needle mounted on said housing for reciprocating movement and connected to said main shaft for movement thereby, first drive means connected to said main shaft to rotate said main shaft and move said needle, a rotatable control cam, a workpiece clamp engageable with the workpiece to advance it into association with the needle, an operating mechanism connected to said workpiece clamp having at least one follower engageable with said control cam and movable thereby, a cam drive motor, a rotatable drive pulley connected to said cam drive motor for rotation thereby, a cam drive shaft connected to said control cam, a planetary gear mechanism associated with said drive pulley including rotatable sun and planet gears connected between said drive shaft and said drive pulley, and a swing member connected to said planetary gear mechanism to shift said sun and planet gears relatively, and means connected between said main shaft and said swing member to drive said swing member from said main shaft.

4,157,687

METHOD AND APPARATUS FOR AUTOMATICALLY SEWING BELTS

Raymond S. Cislak, Chicago Heights, Ill., assignor to Gateway Industries, Inc., Chicago, Ill.

Filed Oct. 11, 1977, Ser. No. 840,956
Int. Cl.[2] D05B *23/00*
U.S. Cl. 112—121.27 **23 Claims**

1. A method of folding an end of safety belts to form a loop and sewing the folded end at a first sewing station and sewing the belt at a nearby second sewing station, such method comprising the steps of:

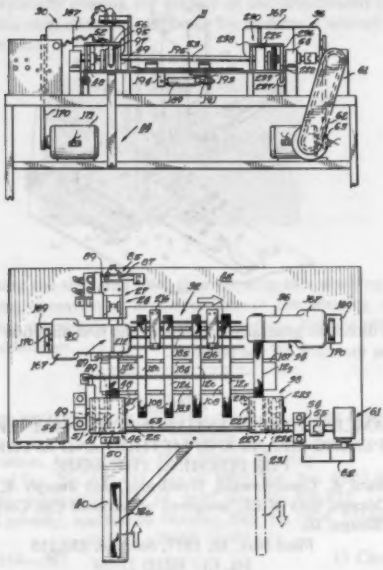
sewing at the second station a previously looped first belt sewn at a first sewing station with a number of lines of stitches in a predetermined second stitch pattern to provide strength to resist tensile forces applied to the belt loop,

during the time of sewing the second stitch pattern folding an end of another belt by a folding device to form a loop therein at a folding station,

during the time of sewing the second stitch pattern and in timed relationship thereto sewing a first stitch pattern to hold the superimposed plies of the belt looped end together, and

shifting the other belt from the first sewing station toward

the second station and shifting the first belt from the second station so that the second sewing station is kept



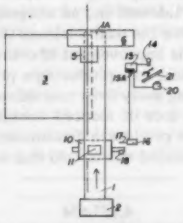
occupied by sewing through a preponderance of the time of its operation.

4,157,688

RATIO INDICATOR FOR RUFFLING APPARATUS

Harold C. Forrester, Louisville, Ky., assignor to Louisville Bedding Company, Louisville, Ky.

Filed Jan. 3, 1978, Ser. No. 866,701
Int. Cl.[2] D05B *35/08*
U.S. Cl. 112—132 **15 Claims**



1. In a ruffling machine for receiving ruffling, pleating, gathering or like stock material and for forming a succession of ruffles in said stock material, progressively sewing said ruffles as they are formed and then delivering the ruffled material, a ratio indicator comprising:

A. material driven means engaged with and driven by said ruffling material; and

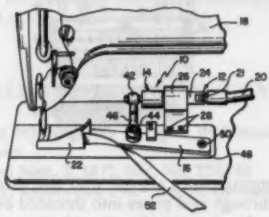
B. indicator means actuatable by said driven means and operative, when actuated during a ruffling operation, to indicate the relationship of the actual ratio, between a given length of incoming stock material and the corresponding smaller length of outgoing ruffled material, to a desired ratio therebetween.

4,157,689

MOVEABLE MOUNTING FOR SEWING MACHINE BINDER

Karl Weigert, Englishtown, N.J., assignor to Reliable Attachment Company, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,499
Int. Cl.[2] D05B *35/00*
U.S. Cl. 112—137 **8 Claims**



8. Apparatus for the feeding of an attachment-formed strip of fabric into the needle of a sewing machine of the type which intermittently advances the material to be sewn into the sewing machine, comprising:

(a) eccentric means having an input and an output for converting rotary motion to eccentric motion, said eccentric meas comprising:

(i) a main body portion defining a guide track exending from the axis of rotation of the main body portion;

(ii) means for rotatably supporting said main body portion;

(iii) threaded support means mounted in said body portion;

(iv) a support body defining a tapped hole, said tapped hole mating with said threaded support means, and said support body being positioned, configured and dimensioned to be slideably mounted in said track and maintained in position by said threaded support means by being threadably mounted thereon and to have its position in the guide track of the main body portion adjusted by rotation of said threaded support means;

(v) input means for coupling rotary motion to said main body portion; and

(vi) output means for coupling eccentric motion from said support body;

(b) first coupling means for coupling the input of said eccentric means to a source of rotary power;

(c) support means adapted to support a sewing machine attachment at a position where the output of said attachment may be fed into said sewing machine;

(d) mounting means for moveably supporting said support means on said sewing machine; and

(e) second coupling means for coupling the output of said eccentric means to said attachment to impart a reciprocating motion to the support means and the attachment mounted on it.

4,157,690

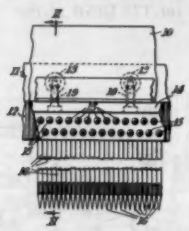
NEEDLE BAR FOR A TUFTING MACHINE

Kenneth Lund, Accrington, and Barrie Bleasdale, Oswaldtwistle, both of England, assignors to Edgar Pickering (Blackburn) Limited, Blackburn, England

Filed Mar. 7, 1978, Ser. No. 884,194
Claims priority, application United Kingdom, Mar. 16, 1977, 11175/77; Jan. 9, 1978, 00761/78
Int. Cl.[2] D05B *55/02*
U.S. Cl. 112—226 **2 Claims**

1. A needle bar assembly for a tufting machine for supporting a plurality of needles for reciprocation toward and away from a backing fabric, the assembly comprising, a main bar having an upper and a lower portion at a side surface thereof, said lower portion having downwardly extending saw teeth formed in said surface, said needles being located in adjacent

recesses of said saw teeth and projecting downwardly from said main bar, threaded holes located in said upper portion at said side surface, a plurality of adjacent clamping plates for clamping a group of adjacent needles in said recesses, screws



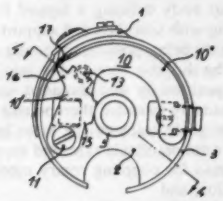
on said clamping plates aligned with said threaded holes and extending through said plates into threaded engagement with said holes, whereby said clamping plates are secured to said main bar and said needles are clamped in said recesses.

4,157,691

SPOOL CASE FOR SEWING MACHINES

Alberto Cerliani, Pavia, Italy, assignor to Costruzioni Meccaniche Cerliani S.p.A., Pavia, Italy

Filed Mar. 13, 1978, Ser. No. 886,082
Claims priority, application Italy, Jul. 13, 1977, 25693 A/77
Int. Cl.[2] D05B *57/26*
U.S. Cl. 112—229 **4 Claims**



1. A spool case for a stitch-forming mechanism for a sewing machine comprising a case having a front wall a central hub and a cylindrical skirt portion defining a cavity or recess accommodating a thread spool, a flat spring secured internally on said front wall by a securing screw, an adjusting screw acting on said flat spring adjusting a braking pressure on said spool, said flat spring having a first projection or lug engaging said skirt portion of said case at a point intermediate the adjusting screw and the securing screw and said flat spring having a second projection or lug engaging said central hub.

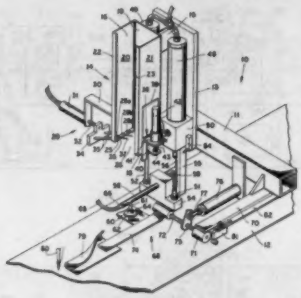
4,157,692

LABEL DISPENSING SYSTEM FOR USE WITH SEWING APPARATUS

Charles E. Brocklehurst, Donalds, and Perry E. Burton, Fountain Inn, both of S.C., assignors to Opelika Manufacturing Corp., Chicago, Ill.

Filed Feb. 23, 1977, Ser. No. 771,156
Int. Cl.[2] D05B *97/12*; B65H *3/08, 3/22*
U.S. Cl. 112—262.3 **25 Claims**

5. A method of dispensing labels or other flat objects from the end of a stack of labels comprising supporting the end label in the stack of labels at one edge of the end label on a shelf, and supporting the end label in the stack of labels at its opposite edge on a platform, pushing the end label in a first direction laterally off the shelf while maintaining the opposite edge portion of the end label on the platform so as to bow the end label outwardly from the stack, gripping the label, at least partially relieving the support of the end label in the stack of labels at its opposite edge on the platform, and pulling the label



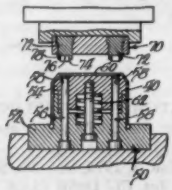
in a direction generally opposite to the first direction laterally from the stack off the platform.

4,157,693

SEAMLESS DRAWN AND IRONED CONTAINER WITH OPENING MEANS AND METHOD AND APPARATUS FOR FORMING THE SAME

Richard A. Openchowski, Woodridge, and Joseph A. Bronec, Chicago, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Nov. 10, 1977, Ser. No. 850,215
Int. Cl.[2] B21D *51/38*
U.S. Cl. 113—120 H **11 Claims**



5. In a method of drawing and ironing a metal container from a flat metal disc comprising the steps of drawing said disc into a cup having a sidewall and an integral end wall, ironing said sidewall to reduce the wall thickness thereof, and reforming said end wall, the improvement of coining a reduced area in said end wall of said cup, producing a protuberance in said coined area extending away from said sidewall, and forming a substantially closed area of reduced thickness in said coined area of said cup to produce a fracturable web defining an opening panel of reduced size in said end wall.

4,157,694

METHOD OF PRODUCING A TIN-PLATED SEAMLESS CONTAINER

Tadashi Nemoto; Ryoichi Fukumoto, both of Yamaguchi, and Kozi Hakoda, Kudamatsu, all of Japan, assignors to Tokyo Kohan Co. Ltd., Tokyo, Japan

Filed Mar. 16, 1978, Ser. No. 888,150
Int. Cl.[2] C25D *5/10*; B21D *51/26*
U.S. Cl. 113—120 A **5 Claims**

1. A method of producing a seamless container which consists essentially of:

forming a first layer of an iron-tin alloy on a low carbon steel sheet or strip by first forming a small amount of iron oxide on the surface of the low carbon steel sheet or strip and then electrolytically tinplating the surface of said steel with the generation of hydrogen during the electroplating

thereof to form the iron-tin alloy layer, said iron-tin alloy being present in an amount of 0.005 to 0.2 g/m^2 on said steel, calculated as the tin content in the iron-tin alloy;

electrolytically coating the surface of the thus-treated low carbon steel sheet or strip with tin to form a second tin layer, and

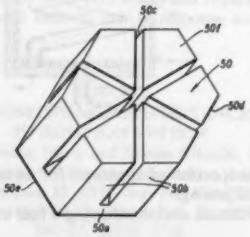
subjecting the tinplated steel sheet or strip to a drawing or ironing operation or a combination of the drawing and ironing operations to form an electrolytic tinplate seamless container.

4,157,695

CONSTRUCTION UNIT, SUCH AS QUAY, CONTAINER OR PLATFORM

Einar Knutsen, Astrupvei 36, 5032 Minde, Norway

Division of Ser. No. 610,431, Sep. 4, 1975, Pat. No. 4,037,423.
This application May 26, 1977, Ser. No. 800,872
Claims priority, application Norway, Sep. 26, 1974, 743469
Int. Cl.^{2} B63B *35/00*
U.S. Cl. 114—267 **13 Claims**



11. In a floatable construction unit a raft comprising a plurality of floatable construction elements having horizontally disposed and upwardly opening slots therein, and an annular stiffener member surrounding associated slot defining portions of adjacent elements and coupling said elements together in mutually abutting relation with slots in adjacent elements in lateral communication with each other, said slots in said elements cooperating to define at least two horizontally disposed and upwardly opening form slots laterally intersecting in crossing relation.

4,157,696

ANIMAL LITTER PELLETS

George Carlberg, Rte. 1, Box 24, Manns Choice, Pa. 15550

Filed Aug. 31, 1977, Ser. No. 829,347
Int. Cl.^{2} A01K *29/00*
U.S. Cl. 119—1 **20 Claims**

1. A liquid absorbent and deodorizing composition for use as an animal litter comprising a mixture of:

a. flyash and,

b. a particulate liquid flow channeling means in an amount by weight of at least 5% of the total weight of the mixture, said particulate means being selected from the group consisting of fibrous material, clays, vermiculite, perlite and powdered agricultural waste,

said mixture being compressed into pellets having a major dimension greater than the dimension of each particle forming the particulate flow channeling means, and

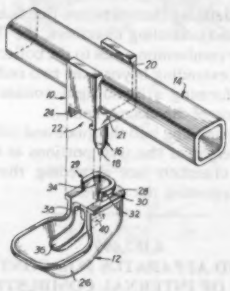
a plurality of discrete paths being formed within each pellet from said particulate flow channeling means to permit on contact with an animal waste liquid a liquid communication between the pellet surface and the interior of the pellet to achieve quick liquid penetration below the surface of the pellet and to simultaneously direct said liquid into effective contact with the flyash substantially throughout the pellet for more rapid deodorization and dehydration of the animal waste liquid.

4,157,697

WATER COLLECTING DEVICE FOR AN ANIMALS WATERING VALVE

Hans Neher, Am Wickengarten 10, 6292 Weilmunster 4, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,746
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609073
Int. Cl.^{2} A01K *39/02*
U.S. Cl. 119—75 **20 Claims**



1. A water collecting device for a watering valve, particularly for smaller animals, said watering valve having one end connected to a water pipe and having a movable valve stem at another free end, said water collecting device comprising an elastic holding clamp attachable to said water pipe without tools; a bottom portion having a collecting bowl and an actuating lever pivotally mounted in said collecting bowl, said valve stem being movable by said actuating lever; connecting means having bayonet-type catch quick-connecting means both at said bottom portion and at said holding clamp and being adapted for detachably connecting said bottom portion to said holding clamp without tools by firstly inserting part of the quick-connecting means of said bottom portion into top of the quick-connecting means of said holding clamp and by secondly turning said bottom portion substantially 90°.

4,157,698

WATER HEATING BOILER

Hans Viessmann, Im Hain, Battenberg, Eder, Fed. Rep. of Germany (3559)

Filed Oct. 5, 1977, Ser. No. 839,579
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645717
Int. Cl.^{2} F22B *7/00*; F23M *9/00*
U.S. Cl. 122—136 R **9 Claims**

1. A water heating boiler comprising

(a) a water-carrying housing including two end walls, the housing being of sheet steel,

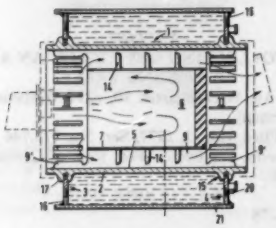
(b) a thin-walled cylindrical casing of cast iron arranged within the housing, the casing having an inner and an outer surface, and regions contacted by condensate and not machined, and the casing including

(1) a plurality of webs cast on the casing and extending

radially inwardly from the inner surface thereof and about its entire circumference, and

(c) a sleeve supported by the webs and defining a combustion chamber for the combustion of a fuel to form combustion gases,

(1) the casing defining adjacent one end of the sleeve a guide chamber and adjacent an opposite end of the sleeve a combustion gas collecting chamber, the guide chamber being arranged to receive the combustion gases from the combustion chamber,



(2) the webs defining therebetween flue ducts connecting the guide and collecting chambers, the flue ducts conducting the combustion gases to the collecting chamber,

(3) the casing extending beyond the two end walls and the end walls forming a liquid-tight connection with the outer surface of the casing, and

(4) the webs extending into the guide and collecting chambers, the height of the web portions in the guide and collecting chambers not exceeding that of the web portions supporting the sleeve.

4,157,699

METHOD AND APPARATUS FOR CONTROLLING SPARK TIMING OF INTERNAL COMBUSTION ENGINE

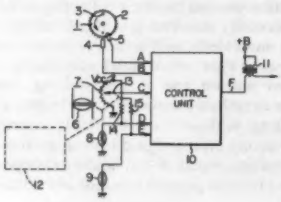
Yasunori Mori, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1978, Ser. No. 877,702

Claims priority, application Japan, Feb. 25, 1977, 52-19205

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—117 D **10 Claims**



1. A method for controlling the ignition timing of an internal combustion engine including an ignition device, comprising the steps of:

detecting, prior to engine start, the output of a sensor for detecting the state of means affecting engine operation, and storing the detected value as an initial value;

detecting, after engine start, the output of said sensor for detecting the state of said means affecting engine operation, and correcting the detected value by said initial value stored;

calculating a command value of ignition timing on the basis of said corrected detected value; and

controlling the ignition timing according to said command value.

6. An electronic ignition timing advancing apparatus for controlling the ignition timing of an internal combustion engine including an ignition device, comprising:

a first sensor for detecting the state of means affecting engine operation;

memory means for storing the value detected by said sensor; and

a microprocessor for controlling the ignition timing of said ignition device on the basis of the detected value of said sensor, said microprocessor reading the detected value of said sensor prior to engine start according to a pregiven program, storing said detected value in said memory means as an initial value, reading the detected value of said sensor after engine start and correcting the detected value after engine start by said stored initial value, calculating a command value of ignition timing on the basis of said corrected detected value, and controlling the ignition timing on the basis of said command value.

4,157,700

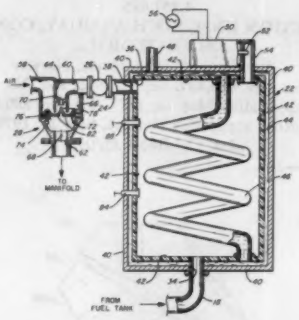
PRE-VAPORIZATION SYSTEM

George E. Conner, 5559 Holly Springs, Houston, Tex. 77027

Filed Aug. 18, 1977, Ser. No. 825,821

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 E **14 Claims**



1. Fuel pre-vaporization apparatus for an internal combustion engine comprising:

a fuel vaporization chamber having a fuel inlet and a vapor outlet;

means for generating microwaves;

microwave absorbing heat transfer means exposed to said microwave generating means and associated with said vaporization chamber in heat communication relation with the interior of said chamber, said apparatus being adapted to prevent passage of at least a portion of said heat transfer means to said engine; and

vapor transfer means communicatively connected to said vapor outlet of said vaporization chamber for transmitting vapor from said vaporization chamber to said engine.

4,157,701

DIESEL ENGINE CONTROL MEANS

Peter B. J. Holtrop, deceased, late of Carson, Calif.; by Juliet Holtrop, executrix, 1500 Cyrene St., Carson, Calif. 90746, and John T. Hewitt, 1021 Camino Real, Redondo Beach, Calif. 95709

Filed Jun. 15, 1977, Ser. No. 806,615

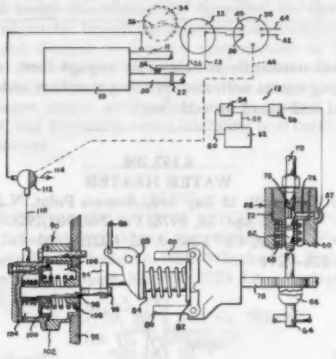
Int. Cl.[2] F02D *1/04*

U.S. Cl. 123—140 MC **7 Claims**

1. In an internal combustion engine having multiple cylinders and fuel supply means including multiple metering valves and injectors, one for each of said cylinders, with a rack mechanism to control the volume of fuel delivered by said metering valves and injectors and an aneroid unit connected by a line to the intake manifold of said engine to apply the pressure of the intake manifold to said aneroid the improvement which comprises

an engine exhaust gas temperature sensing means to generate a sensed signal responsive to engine exhaust gas temperature;

control means to receive said sensed signal, compare said signal to a preset signal level corresponding to a maximum safe operational engine temperature, and to generate a control signal therefrom when said sensed signal exceeds said preset signal level;



excess temperature control means which comprises valve means in said line from said aneroid unit to said intake manifold; and

means interconnecting said control means to said valve means to actuate said valve means and reduce the pressure applied to said aneroid unit in response to said control signal.

4,157,702

AUTOMATIC IGNITION TIMING ADVANCING DEVICE IN IGNITION SYSTEM

Nobuhiko Ogasawala, Mito, and Masao Kikuchi, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1978, Ser. No. 873,872

Claims priority, application Japan, Feb. 24, 1977, 52/19489

Int. Cl.[2] F02P *5/08*

U.S. Cl. 123—149 C **2 Claims**

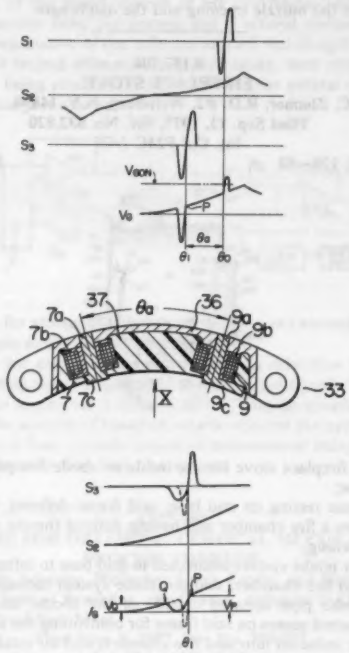
1. A device for automatically advancing the ignition timing in an ignition system for an internal combustion engine including an ignition coil consisting of a primary winding and a secondary winding arranged to induce a high voltage thereacross in response to an intermittent flow of a current through said primary winding, a spark plug generating an ignition spark across its spark gap in response to the supply of said induced high voltage, and current control means making on-off operation for controlling said intermittent current flow through said primary winding of said ignition coil, said device comprising:

means for generating, in synchronism with the rotation of the engine, a first signal of a positive voltage pulse having a rising point at a first predetermined phase;

means for generating, in synchronism with the rotation of the engine, a second signal of a negative voltage pulse having a rising point at a second predetermined phase leading said first predetermined phase;

means for generating, in synchronism with the rotation of the engine, a third signal including a positive voltage waveform portion having an amplitude increasing with time within the phase range including said first predetermined phase and said second predetermined phase, said amplitude being smaller than that of said positive voltage pulse in said first signal at said first predetermined phase; and

means for combining said first, second and third signals together to provide a composite signal which is supplied to said current control means as a control signal for controlling the on-off operation of said current control means, said means for generating said second pulse including means for extending the width of said second pulse such that the



peak voltage level appearing in said composite signal at a phase leading said second predetermined phase as the result of the combination of said second and third signals is lower than a threshold level used for the control of the on-off operation of said current control means.

4,157,703

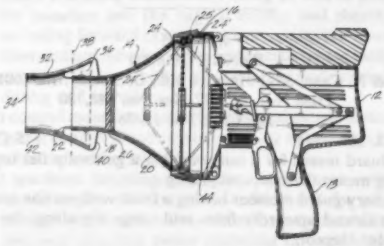
TOY GUN

Gary W. Brown, Huntington Beach; Jimmie L. Whittington, Diamond Bar, and Douglas A. Geller, Monrovia, all of Calif., assignors to WHAM-O Mfg. Co., San Gabriel, Calif.

Filed Apr. 24, 1978, Ser. No. 899,505

Int. Cl.[2] A63H *5/00, 33/00*

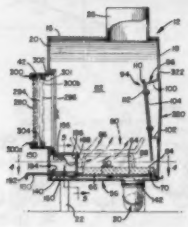
U.S. Cl. 124—55 **19 Claims**



10. In a toy gun having a parabolic barrel with a muzzle opening substantially smaller in diameter than the end opposite therefrom, a resilient diaphragm mounted interiorly of the barrel and extending transversely of the longitudinal axis of the

barrel, means for grasping and stretching the diaphragm rearwardly, and means for releasing the diaphragm from such a rearward diaphragm stretched position for providing a sudden compression of air which is expelled from the muzzle, an improvement comprising a screen mounted within the barrel between the muzzle opening and the diaphragm.

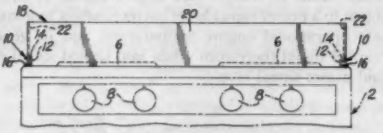
4,157,704
FIREPLACE STOVE
Ernest C. Zimmer, R.D. #2, Wellsburg, N.Y. 14894
Filed Sep. 13, 1977, Ser. No. 832,820
Int. Cl.[2] F24C *1/08*
U.S. Cl. 126—62 **20 Claims**



1. A fireplace stove for use inside an abode comprising:
a base;
a frame resting on said base, said frame defining with said base a fire chamber and having defined therein an access opening;
an air intake system connected to said base to infuse air into said fire chamber, said air intake system including an air intake pipe opening outside of the abode, and a draft control means on said frame for controlling the amount of air inducted into said fire chamber, said air intake system including an air intake pipe connected to said base, a draft duct fluidly connected to said air intake pipe, a draft box mounted on said base to be located in said fire chamber and fluidly connected to said air duct to receive air therefrom, said draft box having openings defined therein to introduce air into said fire chamber, a draft plate located between said draft box and said air duct, said draft plate being slidably mounted on said frame to prevent and permit a flow of air into said draft box from said air duct to control the amount of air introduced into said draft box and thereby control the amount of air introduced into said fire chamber;
a viewing door on said frame for covering said fire chamber access opening, said door including supporting means for slidably receiving a spark screen, a viewing window, and a heat shield; and
an exhaust system on said frame for exhausting air from said fire chamber.

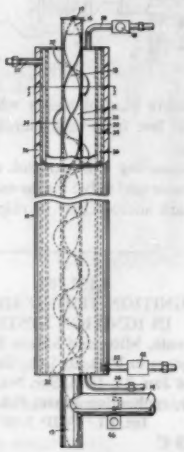
4,157,705
RANGE GUARD
Michael N. Caan, 5911 Harwick Rd., Bethesda, Md. 20016
Filed Nov. 4, 1977, Ser. No. 848,730
Int. Cl.[2] F24C *15/36*
U.S. Cl. 126—211 **5 Claims**

1. Guard means for a range having a generally flat top and heating means thereon, comprising:
a unitary guard member having a front wall portion adapted to extend upwardly from said range top along the front edge thereof;
side walls extending rearwardly from the ends of said front wall portion and adapted to extend along the side edges of said range top, said side walls being resiliently flexible away from each other and having retainer engaging means thereon; and at least a pair of retaining members adapted to be secured to said range adjacent respective side edges thereof and being configured to interlockingly engage said retainer engaging means whereby said side walls may be



flexed outwardly to releasably engage their retainer engaging means with said retaining members and releasably hold said guard on said range.

4,157,706
WATER HEATER
Emanuel P. Gaskill, 15 Bay Ave., Somers Point, N.J. 08244
Filed Apr. 28, 1978, Ser. No. 901,192
Int. Cl.[2] F24S *3/02*; F22B *9/00*
U.S. Cl. 126—271 **4 Claims**



1. A water heater capable of utilizing as one of its heat sources hot exhaust gases emitted from at least one other heat source such as a furnace fueled by a natural resource fuel, and capable of utilizing as another of its heat sources heat emitted from a fluid heated by solar energy, the water heater comprising:
a. a central flue having a heat conductive wall, one end of said flue having a thimble member secureable to an exhaust pipe carrying hot exhaust gases emitted from at least one heat source fueled by a natural resource fuel and the other end of said flue secureable to a chimney leading to the atmosphere, said flue having disposed therein for substantially the entire length of the flue a turbulator means which disperses entering hot exhaust gases along the interior surface of the wall of the flue for substantially the entire length of the flue;
b. a fluid tight tank for water, said tank surrounding the central flue and having as its inner wall the wall common to the flue and having a heat conductive outer wall, said tank also having an inlet pipe at its bottom through which water under pressure from a water source can enter and having an outlet pipe at its top through which said water can exit under pressure, and said tank having disposed therein a turbulator means which disperses entering water along the interior surfaces of the inner and outer tank walls;

c. a hollow jacket surrounding and in contact with the outer wall of the tank, said jacket having heat conductive walls and having fluid inlet and outlet means, said jacket to house fluid to be in communication with like fluid within a solar heat collection means;

d. a circulator means to draw fluid from the jacket and force said fluid into the solar heat collection means while concurrently drawing fluid from the solar heat collection means and forcing said fluid into the jacket, said circulator means being thermostatically activated by thermostatically adjustable temperature sensors independently adjustable and situated to measure temperatures of the fluid within the solar heat collection means, the water exiting the tank, and the gases within the flue, respectively; and

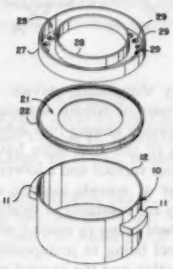
e. insulation means surrounding and in contact with the jacket, said insulation means inhibiting heat conduction to the ambient.

4,157,707

OVERFLOW PREVENTING KITCHEN UTENSIL

Heinz F. Schwind, 7703 Hartel St., Philadelphia, Pa. 19152; Annemarie Titz, Hünefeld 6, 8000 München 50, Fed. Rep. of Germany, and Leopold Koestel, 2729 Line Lexington Rd., Hatfield, Pa. 19440

Filed Apr. 29, 1977, Ser. No. 792,190
Int. Cl.[2] A47J *27/58*
U.S. Cl. 126—386 **6 Claims**



1. A cooking utensil adapted to be positioned upon the rim of a cooking vessel, comprising:

a first annular channel open toward the center and defined by upper and lower walls;

a second annular channel open toward the top and defined by inner and outer walls connected by bottom, the upper wall of the first channel defining the bottom of the second channel and the lower wall of the first channel being defined by an annular shelf-like member detached from the second channel; and

a plurality of apertures in the bottom of the second channel communicating with the first channel, said apertures being positioned closer to the outer wall of the second channel than to its inner wall.

4,157,708

EYE FUNDUS PLETHYSMOGRAPH ASSEMBLY

Kenji Imura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

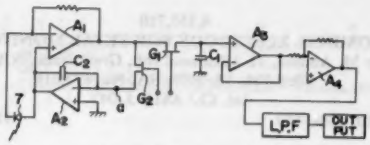
Filed Oct. 22, 1976, Ser. No. 734,768
Claims priority, application Japan, Oct. 29, 1975, 50/130651
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—666 **13 Claims**

1. An eye fundus plethysmograph assembly capable of measuring the amount of blood in blood vessels adjacent the eye fundus without contacting or distorting the eye comprising;

means for directing at least a respective first and second wavelength of energy from a source into a subject eye that is physically in a natural undisturbed configuration;

means for receiving a reflected portion of the respective first and second wavelengths of light energy from the fundus of the subject eye;

means for producing a first output signal representative of the reflected first wavelength including both a first indication of the blood volume of the eye fundus and a first reflection from the cornea and a second output signal representative of the reflected second wavelength including a second reflection from the cornea, both output signals being produced without altering the natural shape of the subject eye; and



means for attenuating the respective first and second output signals to a common reference level;

means for compensating for the cornea reflection by subtracting one of the first and second output signals from the other to provide a representative plethysmograph output of the amount of blood in vessels adjacent the eye fundus over at least a cyclic period of measurement independent of the reflection from the cornea.

4,157,709

PROBE FOR OBTAINING CERVICAL MUCUS AND PROCESS THEREOF

Samuel R. Schuster, Wellesley; Louis Kopito, and Harold Kosasky, both of Brookline, all of Mass., assignors to Ovutime, Inc., Brookline, Mass.

Filed May 9, 1977, Ser. No. 795,097
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—759 **14 Claims**

1. A vaginal probe comprising:

(a) sheath means characterized substantially by an original shape extending substantially along an axis of elongation for insertion into the vaginal cavity, said sheath means including forward extremity means connected thereto and intermediate mouth means, said sheath means being sufficiently rigid to substantially maintain said original shape during said insertion;

(b) control means causing closing of said mouth means when in one condition and causing opening of said mouth means when in another condition;

(c) specimen sampling means for confinement within said sheath means when in one condition and for protrusion through said mouth means when in another condition; said specimen sampling means extending through a curvature when in said other condition, from said mouth means to the cervical os

(d) said specimen sampling means being confined within said sheath means when said sheath means is inserted into and is withdrawn from the vaginal cavity;

(e) said specimen means being in contact with the cervical os

when said extremity means is seated in the posterior fornix, said control means is in said one condition so that said mouth means is open, and said specimen means is in said one condition so that it protrudes through said mouth means;

(f) said forward extremity means having a configuration for seating in the posterior fornix and being a mechanical reference ranging in length along said axis from 1 to 5 centimeters and maintaining said length along said axis during said insertion.

4,157,710

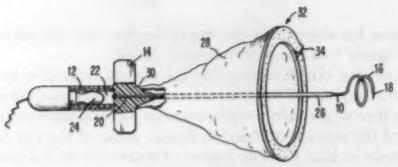
ABDOMINAL ELECTRODE FOR FETAL MONITORING

Moise M. Abitbol, 41 Allenwood Rd., Great Neck, N.Y. 11023

Filed Feb. 13, 1978, Ser. No. 877,019

Int. Cl.[2] A61B 5/04

U.S. Cl. 128—642 **11 Claims**



1. A fetal electrode device for introduction through the abdominal wall of a pregnant woman or animal for monitoring the fetal heart, comprising:

a longitudinal electrode rod having a handle end and a pointed tip end with its handle end being adapted for electrically connecting to monitoring equipment; and

an electrode tip portion at said pointed tip end of said electrode rod adapted to cut and penetrate through said abdominal wall, said longitudinal electrode rod being electrically insulated and having a length sufficient to extend through the abdominal section and uterine wall, and said electrode tip portion having an extension means from said rod for hooking said tip portion on to said fetus and thereby pick up electric signals therefrom.

4,157,711

ELECTROCARDIOGRAPH APPARATUS CAPABLE OF DISCERNING THE H-WAVE IN THE P-Q INTERVAL

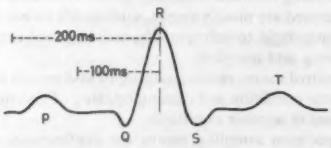
Reuben Yotam, Ramat Aviv; Yoram Lass, Tel Aviv, and Abraham Caspi, Rehovot, all of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd., Ramat Aviv, Israel

Filed Mar. 27, 1978, Ser. No. 890,240

Claims priority, application Israel, Apr. 1, 1977, 51805

Int. Cl.[2] J61B 5/04

U.S. Cl. 128—708 **3 Claims**



1. Electrocardiograph apparatus, comprising: electrode means for application to external parts of a patient to produce ECG signals accompanying the contractions of the different cavities of the heart; a system for processing the ECG electrical signals to enable discerning the H-wave produced by the HIS-bundle, comprising: an R-wave peak detector for detecting the peak of the R-wave in the ECG signal; a charge transfer device for delaying the ECG signal at least 50 ms; a signal averager circuit triggerable by a trigger pulse for summing a plurality of the ECG signals in time-locked relationship to the trigger pulse; means for inputting said delayed ECG signal into the signal averager circuit; means for triggering the signal averager circuit by said detected R-wave peak, thereby causing the signal averager circuit to sum a plurality of the ECG signals in time-locked relationship to the detected R-wave peak; and display means for displaying the output of said signal averager circuit.

4,157,712

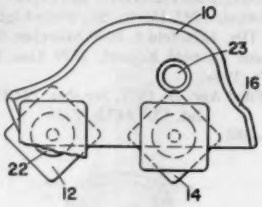
HUMAN BODY STIMULATION DEVICE

Jon E. Gaynor, 447 Commercial St., Provincetown, Mass. 02657

Filed Oct. 21, 1977, Ser. No. 844,271

Int. Cl.[2] A61H 15/00

U.S. Cl. 128—57 **6 Claims**



1. A human body stimulation device comprising a body portion and a first pair of wheels associated with the body portion, the body portion having two sides in spaced relation to each other, each of the two sides having an upper edge connected by an upper surface and a lower edge connected by a base, the first pair of wheels include a first wheel and a second wheel which are rotatable in relation to the body portion and the first wheel being in spaced relation to the second wheel, the first wheel being in juxtaposition with one of the sides of the body portion and the second wheel being in juxtaposition with the other side of the body portion, the first and second wheels each having an external configuraton including corners and having at least one flat edge for engaging the human body and each wheel having a portion adapted to extend to a plane below the base.

4,157,713

AIR-PRESSURE SPLINT

Michael T. Clarey, 2825 Point Tremble Rd., Algonac, Mich. 48001

Filed May 11, 1977, Ser. No. 795,960

Int. Cl.[2] A61F 5/04

U.S. Cl. 128—87 R **2 Claims**

1. An air-pressure splint for fully encasing an injured human leg, said air-pressure splint comprising:

an outer flexible and relatively non-stretchable wall;

an inner flexible wall connected by seaming about its perimeter in air-tight, sealed relationship to said outer wall to coact with the latter and defining a double-walled and sealed, inflatable envelope, said envelope including an air chamber portion in position to surround the entire leg,

an inner flexible wall disposed between said inner wall, said outer wall intermittently connected to the outer wall by air-tight margins forming a plurality of longitudinally disposed laterally spaced air chambers, said air chambers releasably engaging said inner wall to hold said chamber portion in said surrounding position;

releasable, self-locking, slide fastener connecting means longitudinally disposed on said respective separate margins extending from the upper adjacent corresponding ends of the latter to the opposite lower margin ends at the

foot portion of said air splint for releasably connecting the margins together with the chamber portion of the splint surrounding the injured leg, said slide fastener closing as the slide is moved toward the foot portion, the splint having a length to extend beyond the foot a distance, said slide adapted to come to rest against the upper portion of the foot and adapted to exert a slight force on the top of

the foot and preventing rotation of said splint and longitudinal traction of the leg;

the upper ends of said envelope having uneven peripheral contours such that a portion of said envelope end extends upwardly above said leg for restraining said splint from rotating about said leg and exerting an upward pressure on the crotch when said envelope is inflated.

4,157,714

WIRE INSERTER AND STERILE WIRE PACK

Carl L. Foltz, Holiday; Vernon H. Troutner, St. Petersburg, and Arthur F. Trott, Largo, all of Fla., assignors to Concept, Inc., Clearwater, Fla.

Continuation of Ser. No. 610,869, Sep. 5, 1975, abandoned. This application Nov. 16, 1977, Ser. No. 852,030

Int. Cl.[2] A61B *19/00*

U.S. Cl. 128—92 B **4 Claims**

2. A surgical wire for use in a surgical instrument adapted to insert the wire into a living bone material, said wire being left in the living bone material, said surgical wire comprising a body having a generally round cross section formed with a plurality of pairs of opposing flats in the form of chords extending substantially along its entire length to form a substantially uniform cross section of alternating curved surfaces and flat surfaces extending substantially along the entire length of the wire, said flats providing anti-rotational surfaces when said wire is inserted into a living bone material for a predetermined period of time allowing the bone cells to grow inward toward said flats, a spade cutting tip portion formed at one end of said wire, said spade tip portion being bounded by at least one pair of opposite positioned flats on the wire so that the diameter of a hole formed by the drilling of the spade cutting tip portion in the bone material when the wire is used as a drill bit is less than the length of a diagonal of the wire drawn from opposing curved surfaces.

4,157,715

INTRACORPORAL DRIVE TO PRODUCE A CONTINUOUS TRACTION OR PRESSURE AND METHOD OF OPERATING THE SAME

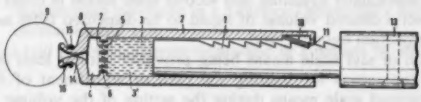
Erhard Westerhoff, Littenweiler Strasse 23, 7800 Freiburg, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,074

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713837

Int. Cl.[2] A61F *5/04*; A61B *17/18*

U.S. Cl. 128—92 D **15 Claims**



1. An intracorporal drive for selectively producing a continuous traction or pressure, especially for an extension unit intended for extension osteotomy or for a compression unit intended for pressure osteosynthesis, comprising:

means defining a first chamber and a second chamber;

a semipermeable diaphragm separating said first and second chambers from one another;

said first chamber being capable of being filled with a first solution of higher concentration;

said second chamber being capable of being filled with a second solution of lower concentration or a pure solvent;

means for maintaining the solution of lower concentration or the pure solvent in contact with the semipermeable diaphragm;

said semipermeable diaphragm separating the first solution of higher concentration and the second solution of lower concentration or the pure solvent from one another, there being utilized as the drive force for the drive the osmotic pressure between the first solution of higher concentration and the second solution of lower concentration or the pure solvent.

4,157,716

APPARATUS FOR THE DOSED DISPENSING OF A LIQUID

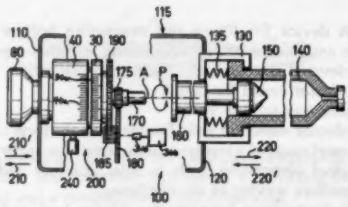
André Rüegg, Zurich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,466

Claims priority, application Switzerland, Mar. 7, 1977, 2777/77

Int. Cl.[2] A61M *5/20*

U.S. Cl. 128—218 A **11 Claims**



1. An apparatus for the dosed dispensing of a liquid by means of an injection device, comprising:

a motor-driven spindle mechanism including a spindle shaft;

a dispensing cylinder for the liquid;

a dispensing piston arrangement axially displaceable at one end thereof in the dispensing cylinder;

said dispensing piston arrangement being operatively connected at its other end with one end of said spindle shaft;

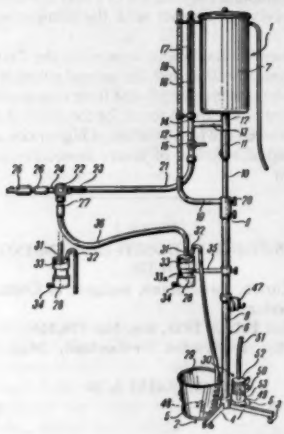
a first scale means connected with the other end of said spindle shaft;
a second scale means cooperating with said first scale means;
said first scale means and said second scale means being structured for operable interengagement with one another;
a coupling element;
adjustment means including an adjustment element operatively connected by said coupling element with said second scale means for axially disengaging said second scale means from said first scale means by rotating said second scale means relative to said first scale means and thus positionally adjusting said second scale means in order to set a desired volume of liquid to be dispensed from said injection cylinder; and
each of said scale means being provided with at least one stop means for limiting the path of adjustment of the second scale means during the setting of the volume of liquid which is to be dispensed.

4,157,717

HYDRODYNAMIC EVACUATOR

Viktor Goldberg, Stuttgart, Fed. Rep. of Germany, assignor to Neumo Armaturenfabrik-Apparatebau-Metalligiesserei GmbH, Knittlingen, Fed. Rep. of Germany

Filed Apr. 22, 1977, Ser. No. 790,059
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 2652155
Int. Cl.[2] A61M *3/00*
U.S. Cl. 128—227 **3 Claims**



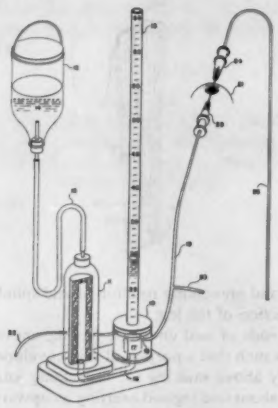
1. A device for filling and evacuating hollow organs in human and animal bodies, comprising, a catheter probe,
an elevated storage tank of adjustable elevation,
a collector vessel for liquid,
a three-way suction valve,
a collector vessel for solid fragments in the form of a waisted vessel made of a transparent material, the upper part of the vessel comprising both an inlet aperture and an outlet aperture serving as an overflow,
hose connections between the storage tank and the three-way valve and the catheter probe, and between the three-way valve and the collector vessel for solid fragments and between the collector vessel for solid fragments and the collector vessel for liquid,
said storage tank being connected to a liquid level indicator in the form of a transparent sight glass referenced to the level of a patient on an operating table or bed,
and a thermometer located within the sight glass for taking the temperature of the liquid therein.

4,157,718

INTRA-OCULAR PRESSURE NORMALIZATION TECHNIQUE AND EQUIPMENT

Edward F. Baehr, Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 31, 1977, Ser. No. 829,318
Int. Cl.[2] A61M *1/00, 5/14*
U.S. Cl. 128—276 **11 Claims**



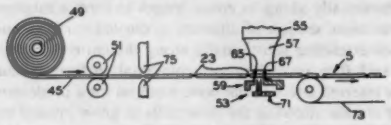
1. Apparatus for ophthalmic surgery comprising:
a pressure regulator of the spring-biased diaphgram type having an inlet, an outlet and a diaphragm having an upper side and a lower side;
a supply of treatment fluid connected to said inlet of said pressure regulator;
a first hypodermic needle connected to said outlet of said pressure regulator;
a generally vertical bias fluid tube having a lower end communicating with the upper side of said diaphragm of said pressure regulator;
a bias bleed means communicating with the upper side of said diaphragm of said pressure regulator for bleeding fluid from said vertical tube to reduce the pressure at said outlet at a predetermined rate; and
pressure relief means providing an outflow path for fluid from said hypodermic needle.

4,157,719

METHOD AND APPARATUS FOR ULTRASONIC SEALING AND CUTTING, AND TABS PRODUCED THEREBY

Irvin S. DeWoskin, St. Louis, Mo., assignor to Beltx Corporation, Barnhart, Mo.

Filed Feb. 17, 1977, Ser. No. 769,546
Int. Cl.[2] B32B *31/18, 31/20*
U.S. Cl. 128—291 **17 Claims**



1. A tab for a sanitary napkin belt comprising three layers of which the outer layers are of flexible ultrasonically sealable fabric and the intermediate layer is of flexible ultrasonically sealable padding material to constitute padding for the tab, the three layers being sealed together along each of their side edges and at each end thereof by a series of discrete thermo-

plastic stitches, and at least one score transverse to the length of the tab, the score being spaced from but adjacent to one end of the tab.

10. The method of ultrasonically sealing and cutting an ultrasonically sealable, continuous strip workpiece for making tabs for sanitary napkin belts comprising combining three strips each of flexible polyester material one upon another with the intermediate strip being of heavier loft, ultrasonically sealing the strips together along their side edges to form a composite, continuous strip workpiece, intermittently feeding the composite strip workpiece forward a predetermined distance with a dwell between successive feed cycles and clamping the workpiece between an anvil and an ultrasonic horn during each dwell, the anvil having a raised pattern corresponding to the seal to be made, the raised pattern on the anvil being such as to seal the strip on two lines spaced lengthwise of the strip, one of said two lines of seal being an arcuate line of seal extending from one side of the composite strip workpiece to the other and the other of said two lines of seal being a straight line of seal extending transversely of the composite strip workpiece from one side of the composite strip workpiece to the other spaced from but adjacent the arcuate line of seal on the convex side of the arcuate seal, ultrasonically powering the horn for ultrasonically sealing the composite strip workpiece where it is clamped against said raised pattern by the horn, and, while the workpiece is clamped and the horn is ultrasonically powered, pressing a cutting edge into the workpiece between said lines of seal from the anvil side of the workpiece to cut through the workpiece transversely from one side of the composite strip to the other between said lines of seal while it is ultrasonically activated adjacent the ultrasonic seal made by the raised pattern.

16. Apparatus for ultrasonically sealing and cutting an ultrasonically sealable workpiece in the form of a continuous strip comprising an anvil having a raised pattern corresponding to the seal to be made and an ultrasonic horn relatively movable toward and away from one another, the raised pattern on the anvil comprising two lines of projections on the anvil, said lines being spaced lengthwise relative to the strip, said anvil having an opening between said lines, one of said lines of projections being an arcuate line for sealing the strip from one side thereof to the other and the other of said lines of projections being a straight line of projections for sealing the strip from one side thereof to the other spaced from but adjacent the arcuate line of projections on the convex side of the arcuate line of projections, the horn being adapted to clamp a workpiece against the raised pattern on the anvil when the horn and anvil are moved relatively to one another, means for ultrasonically powering the horn for ultrasonically sealing the workpiece where it is clamped against said raised pattern by the horn, means for intermittently feeding the strip forward a predetermined distance with a dwell between successive feed cycles, the strip being clamped between the anvil and the horn during each dwell, and a cutter associated with the anvil and operable in the opening thereof having an arcuate cutting edge adjacent the arcuate line of projections and a straight cutting edge adjacent the straight line of projections, said cutter being movable relative to the anvil to press its cutting edge into the workpiece from the anvil side of the workpiece to cut through the workpiece while it is ultrasonically activated adjacent the ultrasonic seal made by the raised pattern.

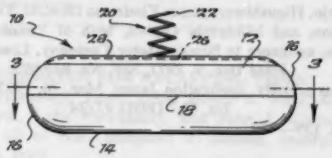
4,157,720

CARDIAC PACEMAKER

Wilson Greatbatch, 5220 Donnington Rd., Clarence, N.Y. 14031

Filed Sep. 16, 1977, Ser. No. 833,920
Int. Cl.[2] A61N *1/04*
U.S. Cl. 128—419 P **10 Claims**

1. A cardiac pacemaker comprising:
(a) a pulse generator having an output and providing output electrical pulses suitable for cardiac stimulation;
(b) a source of electrical energy connected to said pulse generator;
(c) a housing completely enveloping said pulse generator and source, said housing including first and second generally oppositely-directed surface portions meeting in a peripheral portion, said housing having at least one axis extending through said surface portions about which said housing is turnable;
(d) a stimulating electrode operatively connected to said pulse generator output and having a helically shaped portion extending outwardly from said first surface portion of said housing in fixed relation thereto and in a direction substantially along said housing axis, said helically shaped portion having a cross-sectional dimension substantially smaller than the cross-sectional dimension of said housing measured in a direction substantially perpendicular to said axis;
(e) said pacemaker being implanted in a patient by turning



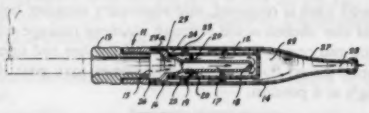
said housing about said axis to rotatively insert said electrode into the heart tissue of the patient until said first surface portion of said housing is substantially in contact with the heart tissue, said second surface portion of said housing contacting neighboring body tissue when said pacemaker is implanted;
(f) said pacemaker being held in place by the combination of the insertion of said electrode in the heart tissue and supporting contact between said housing second surface portion and the neighboring body tissue;
(g) another electrode on said housing electrically coupled to said pulse generator and adapted to contact the neighboring body tissue of the patient; and
(h) electrical insulating means operatively associated with said housing for insulating said stimulating electrode from said other electrode.

4,157,721

CIGARETTE PIPE HAVING A TAR CARTRIDGE

Marcelo M. Balod, 129-14th Ave., Cubao, Quezon City, Philippines

Filed Nov. 22, 1976, Ser. No. 743,756
Int. Cl.[2] A24F *13/02, 1/04*
U.S. Cl. 131—187 **1 Claim**



1. A cigarette pipe having a tar cartridge comprising,
(a) a hollow body member defined by a mounting bore at one end and a mouthpiece at the other end;
(b) an elongated cigarette holder mounted in a press-fit engagement in said mounting bore, said holder being defined by a cigarette the rear end of which is tapered and joined to a short bore which in turn is in communication with receiving bore, an extension bore of reduced diameter contiguous to and in axial alignment with said receiving bore and terminating at a smoke outlet orifice;
(c) an annular plate integrally formed as a one-piece structure on said extension bore disposed proximate the upstream portion thereof said annular plate having diametri-

cally disposed smoke outlet orifices passing therethrough; and

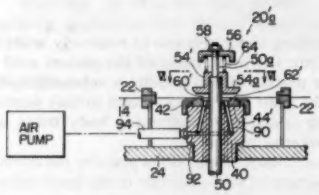
(d) a tar cartridge defined by a closed bottom wall and an open top end to snugly fit on said cigarette holder and said annular plate whereby encompassing said extension bore, said cartridge defining therein a low pressure chamber whereby the high velocity stream of smoke is expanded, cooled and liquefied and said cartridge having smoke outlet openings disposed proximate its open end above said annular plate and communicating to the mouthpiece end through an annular chamber defined between said hollow body member and said cartridge.

4,157,722

WEFT YARN GRASPING APPARATUS FOR FLUID JET LOOM

Akio Tojo, Higashimurayama; Kimimasa Ohnishi, Tokyo; Isamu Hosono, and Mikiyoshi Ogawa, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 9, 1977, Ser. No. 859,097
Claims priority, application Japan, Mar. 26, 1977, 52/32798
Int. Cl.[2] D03D *47/34*
U.S. Cl. 139—450 **8 Claims**



1. A weft yarn grasping apparatus for a fluid jet weaving loom for alternately grasping and releasing a weft yarn to be inserted in the shed of warp yarns to form a fabric, said apparatus comprising:

aligned stationary and movable members respectively having surface portions facing each other, said movable member being reciprocally movable with respect to said stationary member in response to the weaving operation of said loom to intermittently define between said surface portions a clearance through which said weft yarn passes, said stationary member having a recess in the corresponding surface portion to define on the same a bank which surrounds said recess, the surface portion of said movable member being brought into contact with the ridge of said bank to press the weft yarn on the same when gripping of said weft yarn is required, said stationary member having at least one unobstructed through cleaning passage which has one end open to said recess and the other end open to the open air so that lint and miscillanea may pass there through at a portion.

4,157,723

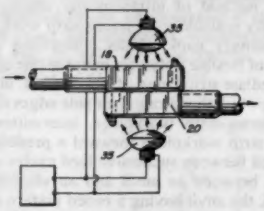
METHOD OF FORMING A CONNECTION BETWEEN TWO SEALED CONDUITS USING RADIANT ENERGY

Daniel B. Granzow, Arlington Heights; Garry L. Carter, Hoffman Estates, and David W. Ammann, Lindenhurst, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 19, 1977, Ser. No. 843,608
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—1 **28 Claims**

1. The method of forming a connection between sealed conduits, each conduit carrying an opaque, thermoplastic wall portion, which method comprises:

bringing said opaque wall portions of said conduits together into facing contact, and exposing said opaque wall portions to sufficient radiant energy to cause said opaque wall portions to fuse together and to open an aperture through



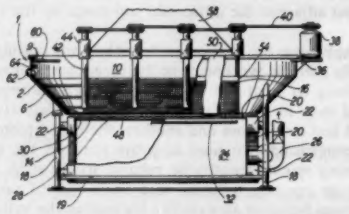
said fused wall portions, providing sealed communication between the interiors of said conduits.

4,157,724

METHOD AND AN APPARATUS FOR DISTRIBUTING A DISINTEGRATED MATERIAL ONTO A LAYER FORMING SURFACE

Torsten B. Persson, Ravnholtvej 164, Testrup, 8320 Maarslet, Denmark

Continuation of Ser. No. 717,384, Aug. 24, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,035
Int. Cl.[2] B65B *1/14, 1/16*
U.S. Cl. 141—1 **21 Claims**



1. Apparatus for depositing and distributing loose fibres or particles onto a surface of a moving carrier web comprising:

(a) a housing having inlet and outlet ends;

(b) a moving carrier web having a surface positioned adjacent the outlet end of said housing;

(c) screen means within said housing between said inlet and outlet ends, at least part of said screen means being arranged so as to extend in a manner which is transverse and non-parallel with respect to the surface of the moving carrier web;

(d) agitator means within said housing for creating a flow of said particles or fibres about an axis extending between said inlet and outlet ends, and for directing said particles or fibres outwardly against and through said screen means; and

(e) means for directing particles or fibres passing through said screen means to said moving carrier web whereby said particles or fibres are deposited in a layer upon said moving carrier web.

4,157,725

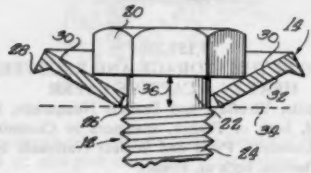
FASTENER AND CAPTIVE FRUSTO-CONICAL WASHER ASSEMBLY

Peter P. Stanaitis, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed Sep. 29, 1977, Ser. No. 837,907
Int. Cl.[2] F16B *39/24*
U.S. Cl. 151—37 **8 Claims**

1. A fastener assembly for engagement in an apertured workpiece or the like, said assembly including a screw member having an enlarged head portion and a shank, said shank including an externally threaded portion and an unthreaded

portion disposed between said head portion and said threaded portion, and an apertured, flexible washer member held captive on said shank in the area of said unthreaded portion by said external thread which is cold rolled to a major diameter greater than that of the aperture in said washer member, said washer member being constructed from a relatively flexible material so that it will flex under anticipated, design loading to a generally planar orientation, said washer including a central aperture through which said unthreaded portion is received, and in the unstress condition, said washer is further defined by generally parallel upper and lower frusto-conical surface por-



tions, with the respective portions diverging in a direction away from said central aperture toward said enlarged head portion, the radially inner edges of said frusto-conical surface portions serving to define partially said central aperture, with the radially outer terminus of said surface portions defining the outer peripheral edge of said washer, with said outer peripheral edge, due to the frusto-conical nature of said surface portions, being disposed at a level above said threaded portion, such that said thread may be cold rolled on said shank in close proximity to said central aperture, without the outer peripheral edge of said washer interferring with said cold rolling of the thread.

4,157,726

TIRE SAFETY SUPPORT

Wendell N. Brewer, Atwater, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 677,485, Apr. 15, 1976, abandoned. This application Nov. 9, 1977, Ser. No. 850,037

Int. Cl.[2] B60C *17/00*

U.S. Cl. 152—330 RF **5 Claims**

1. A segmental, annular tire safety support for use on a rim of a wheel rotatable about an axis and supporting a pneumatic tire mounted thereon in a deflated condition comprising at least two circumferentially spaced segments, each of said segments including a segmental curved member mountable on a wheel rim inside the tire, each said curved member being comprised of generally rigid material and including a rim-engaging portion, an axially extending tire support portion spaced radially outward from said rim-engaging portion for supporting a portion of the tire from the inside thereof when deflated and an intermediate portion joining said rim-engaging portion and said tire support portion, each said tire support portion being radially deflectable when a radial load is applied thereto by engagement with a deflated tire, each of said segments having spaced-apart end portions and a generally cylindrical, radially outer supporting surface of revolution with a substantially constant radius circumferentially of said curved member between said end portions, radially outer end surfaces at said end portions, said safety support further comprising means connecting adjacent end portions of said segments, said means being spaced below the deflection range of said end surfaces, said end surfaces being spaced from said axis a distance less than the length of said radius of said supporting surface, said end surfaces being spaced from said axis in an amount which is great enough to provide relatively flat end surfaces of a size which will distribute the load over the end portions and generate vibration and noise during operation of said tire in the deflated condition, said vibration and noise being sufficient to be communicated to the vehicle operator to indicate the end surfaces have a sufficient size to prevent failure of said intermediate portions by distribution of the load over the end portions.

4,157,727

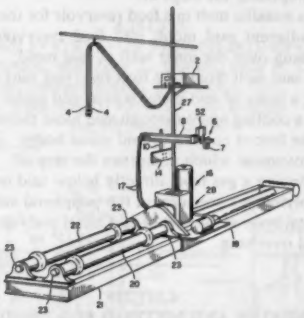
APPARATUS FOR RECAPPING TIRES

John C. McDonough, Essex Fells; James K. Rary, Orange; Arden Birth, Lake Parsippany, and John J. Kuzma, Jr., Wharton, all of N.J., assignors to Bandag, Incorporated, Muscatine, Iowa

Filed Oct. 25, 1977, Ser. No. 844,788

Int. Cl.[2] B29H *21/08*

U.S. Cl. 157—13 **11 Claims**



1. Apparatus for applying grooves to a prepared and smoothed tire tread surface, comprising:

a platform arranged near a pit;

means for supporting the tire including means carried by the platform and longitudinally displaceable relative thereto, and initially disposed partially across the pit, and rotatable means carried by the longitudinally displaceable means and displaceable therewith;

means coupled to the longitudinally displaceable means and operator-operated for displacing said means to span the pit;

the rotatable means having a pair of rollers with portions of the tire beads in contact with the rollers for suspending the tires in the pit and the weight of the tire carried by the rollers for rendering the tire rotatable therewith;

means coupled to the rotatable means and operator-operated for rotating said means to index the tire suspended in the pit to a predetermined position;

a displaceable grooving head;

means supported by the platform for carrying the displaceable grooving head;

the displaceable grooving head including a grooving blade disposed at the predetermined position on tire tread surface;

means for heating the grooving blade; and

means coupled to the displaceable grooving head and opera-

tor-operated for displacing the head across the tire tread surface with the heated blade applying a groove therein.

4,157,728

PROCESS FOR DIRECT CHILL CASTING OF METALS

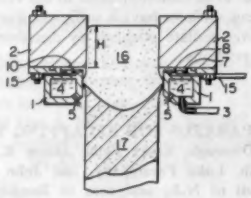
Ryota Mitamura, Yokohama, and Tadanao Itoh, Ichihara, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1977, Ser. No. 820,535

Claims priority, application Japan, Jul. 29, 1976, 51-89620; Mar. 18, 1977, 52-29328; Jun. 24, 1977, 52-77474

Int. Cl.[2] B22D *11/12, 11/16*

U.S. Cl. 164—4 **18 Claims**



1. In a process for direct chill casting of metals in a forced-cooling mold having a lubricating surface on the inner surface thereof comprising the steps of:

storing a metallic melt in a feed reservoir for the melt, above and adjacent said mold, said feed reservoir having an overhang over the inner wall of said mold;

feeding said melt from said feed reservoir into said mold;

holding a body of said metal within said mold; and

passing a cooling agent through said mold thereby performing the forced cooling of said metal body;

an improvement which comprises the step of:

introducing a gas from directly below said overhang and applying gas pressure on the peripheral surface of said metal body at the part of said metal body directly below said overhang.

4,157,729

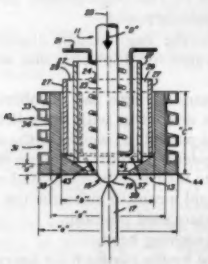
APPARATUS AND METHOD FOR PRODUCING FILAMENTS

Robert J. Patton, Westford, and Thomas J. Sentementes, Wakefield, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 21, 1977, Ser. No. 853,095

Int. Cl.[2] B22D *11/06, 11/10*

U.S. Cl. 164—87 **12 Claims**



1. In an apparatus for producing filaments from a rod of high melting point material wherein said apparatus includes means for liquefying said rod to provide a pendant drop at one end thereof and a rotating heat extracting member for engaging said pendant drop, the improvement wherein said means for liquefying said rod comprises:

first heating means for heating both said end of said rod and a region adjoining said end by thermal radiation to a first temperature immediately below the melting point of said material, said first heating means substantially non-inductive; and

second heating means spacedly positioned from said first heating means for heating only said end of said rod to the melting point of said material to provide a substantially vibration-free pendant drop thereon.

4,157,730

SYSTEM FOR THE STORAGE AND RECOVERY OF HEAT IN A CAPTIVE LAYER

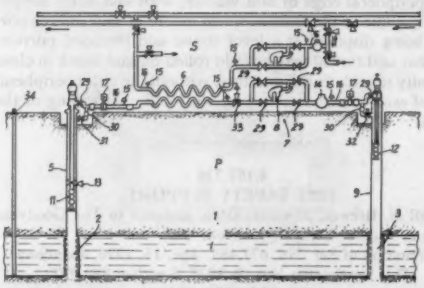
Jacques Despois, Viroflay, and Francis Nougarede, La Celle Saint-Cloud, both of France, assignors to Commissariat a l'Energie Atomique, Paris and Societe Nationale Elf Aquitaine, Courbevoie, both of, France

Filed Nov. 11, 1976, Ser. No. 741,165

Claims priority, application France, Nov. 13, 1975, 75 34641; Sep. 6, 1976, 76 24070

Int. Cl.[2] F28F *27/02*

U.S. Cl. 165—45 **8 Claims**

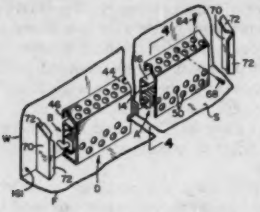


1. A system for the storage and recovery of heat through transfer of heat between the porous and permeable rock matrix of a captive layer and the intergranular free water of said layer which is caused to circulate, said system comprising at least one hot well for higher temperature water and at least one cold well for lower temperature water intersecting said layer in spaced relation to each other, conduit means interconnecting said hot and cold wells externally of said layer, said conduit means, said layer and said hot and cold wells defining the primary circuit for the circulation of the water of said layer, reversible pump means for circulating the water of said layer through said primary circuit in either direction, said reversible pump means comprising at least one pump for extracting water from said hot well at such a height that the water pressure at any point of the primary circuit will be maintained at a higher value than the water vaporization pressure for the temperature at the respective point, second closed circuit means for circulating the fluid medium, heat exchanger means for transferring heat between said primary circuit and said secondary circuit and regulating means for regulating the water flow rate and pressure in said primary circuit for both directions of water flow, said regulating means comprising at least one valve for regulating the rate of injection into said hot well in one direction of flow of the water, said valve being mounted at such a height that the water pressure at any point of the primary circuit will be maintained at a higher value than the water vaporization pressure for the temperature at the respective point.

4,157,731
PROTECTIVE HOUSING FOR STRIP HEATERS

Norbert J. Denhart, 2845 Westonridge Dr., Cincinnati, Ohio 45239

Filed Nov. 2, 1977, Ser. No. 847,831
Int. Cl.[2] F24H *9/04*
U.S. Cl. 165—55 9 Claims



1. A protective housing for a strip heater of the type which includes an elongate conductor tube having a plurality of laterally spaced fins thereon, the housing comprising:

a plurality of elongate sections each of said plurality of sections including a single unitary elongate protective cover having opposite ends, opposite longitudinal sides, a longitudinal axis and a transverse axis, said protective cover being bent along said longitudinal sides toward said longitudinal axis to include a vertical front panel disposed in front of and spaced from strip heater fins, a horizontal bottom panel joined to said front panel along a bottom edge of said front panel by a first bend in said cover and disposed beneath and spaced from a strip heater fins and extending from said front panel to a wall on which a strip heater is mounted, an upwardly inclined top panel joined to said front panel along a top edge of said front panel by a second bend in said cover and disposed above and spaced from a strip heater fins and extending from said front panel to a wall on which a strip heater is mounted, a vertical mounting panel joined to said top panel along a rear edge of said top panel so that a strip heater is completely housed in spaced relationship with and within the protective housing;

at least one of said protective covers having the top panel thereof bent along one end toward said transverse axis and having the front panel thereof bent along said one end toward said transverse axis to form a right angle, with front and top panels respectively of an adjacent one of said protective covers being joined directly to said bent top and front panel ends to form a corner which is continuous, integral and uninterrupted so that a strip heater disposed on a pair of intersecting walls is completely enclosed in an integral protective housing;

a plurality of vent openings defined in said front panel near said first corner;

a plurality of vent openings defined in said top panel, said vent openings permitting passage of air to and from a strip heater enclosed by the protective housing;

fastening means attaching said bottom and mounting panels to a floor and a wall, respectively, said vent openings being located to provide access to said fastening means via said vent openings.

4,157,732
METHOD AND APPARATUS FOR WELL COMPLETION

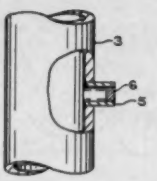
Frederick A. Fonner, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 25, 1977, Ser. No. 844,945
Int. Cl.[2] E21B *43/00*
U.S. Cl. 166—315 24 Claims

9. A method of well completion comprising the steps of:

(1) disposing into a well bore a conduit comprising a first metal element separating the interior of the conduit and a subterranean strata and a second metal element, the first and second metal elements having the capability of acting as a galvanic couple when contacted intimately with an electrolyte, and

(2) contacting intimately the metal elements with the electrolyte for a time sufficient to sacrificially corrode the first metal element, as a result of galvanic action, until a passageway is provided for flow of fluids between the interior of the conduit and the subterranean strata.

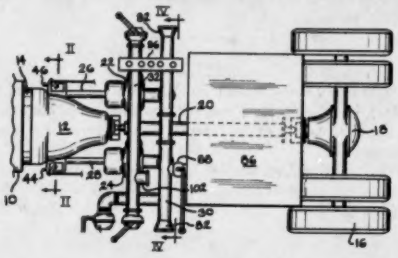


17. An apparatus for well completion comprising a conduit disposed in a well bore which extends from the earth's surface through a first zone of subterranean strata with which communication is not to be established and to a second zone of subterranean strata, the conduit comprising a first metal element, which only excludes communication with the second zone, and a second metal element, the first and second metal elements forming a galvanic couple when contacted intimately with an electrolyte thereby to corrode the first metal element.

4,157,733
DUAL PUMP SYSTEM FOR FIRE FIGHTING VEHICLES

Ronald L. Ewers, and John L. Oakley, both of Ocala, Fla., assignors to Emergency One, Inc., Ocala, Fla.

Filed Aug. 1, 1977, Ser. No. 820,725
Int. Cl.[2] A62C *27/00*
U.S. Cl. 169—24 4 Claims



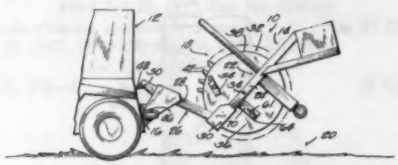
1. A dual pump system for fire fighting vehicles characterized by its low torque requirements to produce a given pumping capacity, ability to pump during vehicle travel, and concise installation comprising, in combination, a vehicle including drive wheels, an engine drivingly connected to said drive wheels through a clutch and transmission mounted within a transmission casing, said transmission including power take-off drive gear means within said casing continuously rotatably driven by said engine during clutch engagement, first and second water pumps mounted upon said vehicle each having an inlet, an outlet and a drive shaft, first and second power take-offs mounted on said transmission casing each in selective driven engagement with said drive gear means and each having an output shaft, first clutch means selectively connecting said drive gear means to said drive shaft of said first pump through said first power take-off, and second clutch means selectively connecting said drive gear means to said drive shaft of said second pump through said second power take-off whereby said first and second pumps may be selectively operated individually or simultaneously and during driving of said drive wheels by said engine and transmission.

4,157,734

SOIL AERATING DEVICE

Charles E. Hines, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 2, 1978, Ser. No. 874,504
Int. Cl.[2] A01B 45/02
U.S. Cl. 172—22 12 Claims



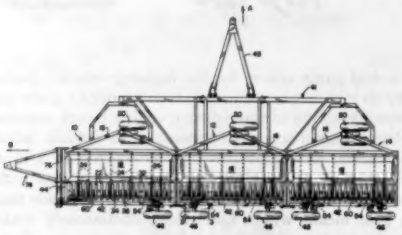
5. A soil aerating device comprising a frame, a hollow cylindrical drum rotatably supported from said frame for rolling travel over the surface of the ground or turf to be aerated, said drum having substantially closed, opposed end walls and a peripheral wall extending between said end walls to define an internal chamber, a portion of said peripheral wall being formed by a door hinged on an axis parallel to the rotational axis of said drum, a plurality of circumferentially spaced core-forming elements mounted on the exterior of said peripheral wall and communicating with said internal chamber for removing cores from the ground or turf and depositing same in said internal chamber as said drum is rolled over the surface of the ground or turf, latch means on said drum and on said door including an element movable between a latching position for releasably retaining said door in the closed position and an unlatching position for permitting said door to be opened for removal of cores from said internal chamber, and combined drum locking and door unlatching means on said frame for selectively preventing rotation of said drum relative to said frame and for selectively moving said element to the unlatching position.

4,157,735

ENDWISE TRANSPORT STRUCTURE FOR DRILLS

Nils O. Olsson, Ancaster, and William Flood, Burlington, both of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,485
Int. Cl.[2] A01B 63/22, 73/00
U.S. Cl. 172—240 9 Claims



2. In a grain drill having a frame and a plurality of side-by-side gangs of press wheels pivotally suspended from the frame for vertical movement relative to the frame; an improved endwise transport system for the drill, comprising:

a transport wheel mounted on said frame for shiftable movement between a raised position and a transport position;

an endwise hitch pivotally mounted on said frame for movement between a raised position and a transport position wherein the hitch may be coupled to a tractor for towing the drill in endwise direction;

a press wheel gang lock mounted on said frame for movement to a position locking said gangs against downward movement;

and means for moving said gang lock toward its locking position in response to movement of said hitch to its transport position, thereby enabling the gangs of press wheels to be held out of ground contact during transport.

3. In a grain drill having a frame and a plurality of side-by-side gangs of press wheels pivotally suspended from the frame for vertical movement relative to the frame, an improved endwise transport system for the drill, comprising:

a plurality of transport wheels mounted on said frame for shiftable movement between a raised position for drill operation and a lowered position for drill transport;

a press wheel gang lock mounted on said frame for movement to a position locking said gangs against downward movement;

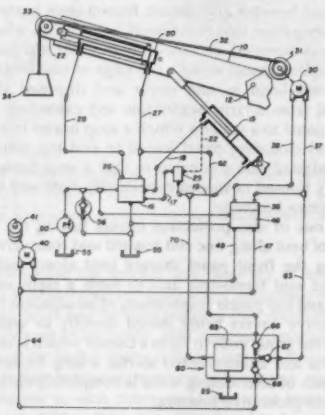
and means for moving said gang lock to its locking position in response to shifting said wheels to their transport positions, whereby the gangs of press wheels will be held out of ground contact during transport.

4,157,736

OVERLOAD PROTECTION APPARATUS FOR HYDRAULIC MULTI-FUNCTION EQUIPMENT

Ralph E. Carbert, 3401 Yukon Ave. S., Minneapolis, Minn. 55426

Filed Jan. 11, 1978, Ser. No. 868,699
Int. Cl.[2] B23Q 5/00; F15B 11/00
U.S. Cl. 173—11 9 Claims



1. Overload protection apparatus for interrelated hydraulic multi-function equipment comprising:

(a) a plurality of bi-directional motors each having a pair of fluid power lines including a forward and a reverse line connected thereto and an associated control valve interposed within each pair of said lines for selectively controlling the direction of the operation of said motors;

(b) one of said motors being interconnected with each of the others in such a way that an increase in the load of one of said others will create a corresponding increase in the load of said one motor;

(c) a source of fluid power connected to each of said valves to supply hydraulic fluid to said motors through said lines;

(d) each of said motors having a fluid supply reservoir to which it is connected to receive the return of fluid therefrom;

(e) an overload protection device including a manifold connected to the forward power lines of said other motors;

(f) said manifold having a passage therein connected to a reservoir and to each of said forward power lines of said other motors;

(g) a dumping valve interposed within said passage and normally closing off the same but being shiftable between containing and dumping positions to simultaneously bring each of said forward power lines into communication with its associated reservoir; and,

(h) a sensor valve connected to said one motor and being operationally sensitive to an overload fluid pressure of predetermined magnitude therewithin;

(i) said sensor valve being controllably connected to said dumping valve and causing the same to shift to dumping position when said sensor valve is operated by such an overload fluid pressure within said one motor;

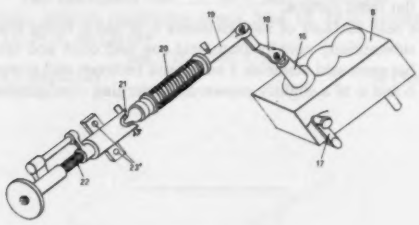
(j) said dumping valve being a pressure actuated spool valve positioned in said manifold and having pressure chambers at each end of the spool, one of said pressure chambers being exposed to the manifold directly and the other of said chambers being exposed to the manifold through a restriction, said latter pressure chamber including a bias spring bearing against the spool, and said spool having a recess therein which upon displacement of the spool aligns with a port to connect the passage in the manifold with the reservoir.

4,157,737

MECHANIC DEVICE FOR THE AUTOMATIC CONTROL, AT TWO SPEEDS, OF WINCHES OF PILE-DRIVERS

Bernardo Petracci, Via Fontana del Monaci, 9, Ciampino, Rome, Italy

Filed Nov. 14, 1977, Ser. No. 851,204
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—81 **9 Claims**



1. A mechanical device for use with pile drivers having winches for the automatic control thereof, including

a probe-weight,

a winch drum having a crown for clutching thereof and carrying a rope fixed to said probe-weight to have said probe-weight perform work at two different percussion speeds,

a control lever connected with said winch,

a motor geared with said winch,

a transformation gear arrangement geared with said motor and said winch, and

an articulated, adjustable rod connected with said control lever and said transformation gear arrangement for operation therethrough of said rod by said motor, said transformation gear arrangement including at least two gears in a variable reciprocal gear ratio variable from 3/1 to 12/1 by means of a change of speed,

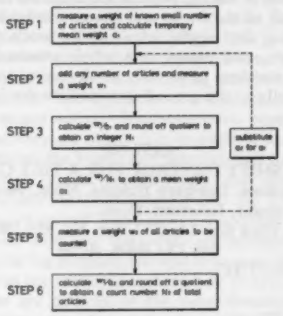
said rod including a locking spring connected intermediate the ends thereof, one end being connected with said transformation gear arrangement for operative connection therethrough with said motor and said other end being coupled with said control lever for operation of said winch through said rod, to perform at every rotation of the crown one or more percussions of the probe-weight.

4,157,738

METHOD FOR COUNTING THE NUMBER OF ARTICLES USING A WEIGHING MACHINE

Yuzuru Nishiguchi, and Utaro Fujioka, both of Tokyo, Japan, assignors to Shinko Denshi Company Limited, Tokyo, Japan

Filed Apr. 26, 1978, Ser. No. 899,906
Claims priority, application Japan, May 15, 1977, 52/55800
Int. Cl.[2] G01G *19/42*
U.S. Cl. 177—1 **4 Claims**



1. A method for counting the number of articles of the same kind with using a weighing machine comprising successively

a step of measuring a temporary mean weight of a known small number of articles;

a step of adding to said small number of articles any unknown number of articles;

a step of measuring a weight of these articles;

a step of calculating the number of the articles by rounding off a quotient which is obtained by dividing said measured weight by said temporary mean weight;

a step of calculating a standard mean weight by dividing said measured weight by said calculated number;

a step of measuring a weight of all articles to be counted; and

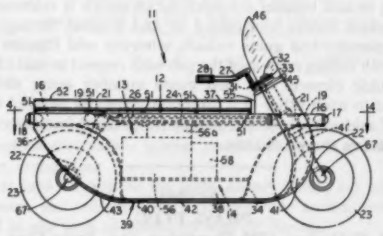
a step of calculating the total number of said all articles by rounding off a quotient which is obtained by dividing said measured weight of said all articles by said standard mean weight.

4,157,739

MOTORCYCLE

Norman V. Frye, Rte. #4, Davenport, Iowa 52804

Division of Ser. No. 677,911, Apr. 19, 1976, abandoned. This application May 10, 1977, Ser. No. 795,578
Int. Cl.[2] B62D *61/02*
U.S. Cl. 180—33 R **4 Claims**



1. A motorcycle having a frame carried at its front and rear ends respectively by front and rear wheel-bearing forks, and a power mechanism located beneath the frame and between the forks, the improvement comrpising: front and rear fender well members rigidly attached respectively to the front and rear ends of the frame respectively ahead of and behind the power

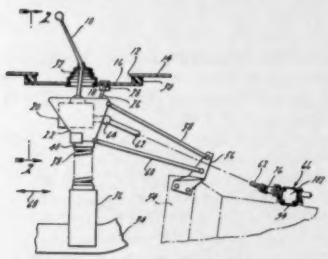
mechanism and each including an opening through which its respective fork extends, the front fender well member having a transverse wall extending downwardly behind the front fork and ahead of the power mechanism and the rear fender well having a transverse wall extending downwardly ahead of the rear fork and behind the power mechanism, means for covering the frame, said means embracing the frame from above and including a top portion extending between and joined to upper portions of the fender well members and overlying the power mechanism and opposite downwardly extending fore-and-aft portions joined to the top portion and disposed respectively at opposite sides of the frame and power mechanism, said side portions being also rigidly joined to the walls of the fender well members, said means as a whole combining with the fender well members to provide an air cavity opening downwardly directly to the ground intermediate the fender wells.

4,157,740

REMOTE SHIFT CONTROL FOR A TILT CAB TRUCK

Mark H. Jackson, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1977, Ser. No. 833,220
Int. Cl.[2] B60K *20/04*
U.S. Cl. 180—77 TC **5 Claims**



1. A transmission gear ratio changing mechanism adapted especially for use with a vehicle having a chassis for supporting a vehicle engine and transmission assembly and a cab mounted for tilting movement on said chassis, said gear ratio changing mechanism comprising a cane type shift lever, said cab having a floor with an opening therein through which said shift lever extends, a shift master control mechanism mounted resiliently on said chassis, the mounting means for said master control providing the resiliency and accomodating floating movement of said master control, said master control comprising a shift lever supporting bracket, a guide element secured to said bracket on a location spaced laterally with respect to the fore-and-aft axis of said vehicle, at least one guide member secured to the floor of said cab and engageable with said guide element on said bracket, said resilient mounting means transmitting to said bracket a vertical force which is counteracted by reaction forces transmitted to said bracket through said guide element and guide vehicle whereby said bracket complies with rolling motion of the cab with respect to said chassis, said guide element and said guide member being slideable relative to each other in a direction generally parallel to the axis of said vehicle to accommodate pitching motion of said cab relative to said chassis.

4,157,741

PHASE PLUG

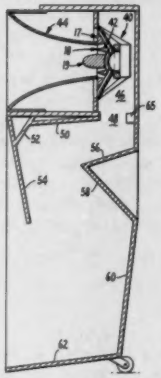
Alan J. Goldwater, 1780 Chanticleer Ave., Santa Cruz, Calif. 95062

Filed Aug. 16, 1978, Ser. No. 934,218
Int. Cl.[2] G10K *13/00*; H04R *7/00*
U.S. Cl. 181—159 **7 Claims**

1. In a loudspeaker and exponential horn combination, a phase plug or acoustic transformer between the front of said loudspeaker and said horn wherein said loudspeaker has a voice coil coupled to a convex dust cover for the voice coil, the periphery of the dust cover being attached to an outward-flaring paper cone, creating an obtuse angle between the dust cover and the cone, said phase plug including three parts, namely:

a. a central member having a round cross-section and having a rear surface congruent with the center portion of said dust cap and having a bulbous front surface,

b. an intermediate ring portion having an angular rear surface congruent with the intersecting surfaces of the cap and cone and having front surfaces forming an acute angle,



c. an outer ring having a rear surface conforming to the peripheral surface of the cone and having a substantially flat front surface,

the rear surfaces of said elements a, b and c being spaced substantially equally from said cap and cone and spaces between said elements a and b and between said elements b and c of a slightly outwardly diverging configuration.

4,157,742

ACCOMMODATION LADDER ARRANGEMENTS

Oscar Aanensen, Torvastad, Norway, assignor to Marine Aluminum Aanensen & Co. A/S, Haugesund, Norway

Filed Jul. 10, 1978, Ser. No. 923,334
Claims priority, application Norway, Jul. 18, 1977, 772541
Int. Cl.[2] E06C *9/06*; B63B *29/20*
U.S. Cl. 182—97 **3 Claims**

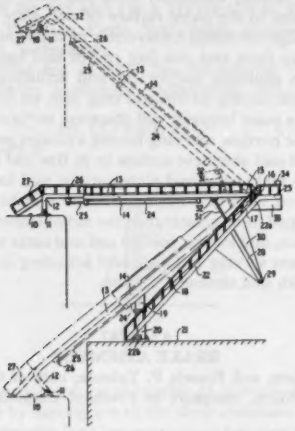
1. Accommodation ladder arrangement comprising:

(a) a first flight of steps the length of which is regulatable and having one end adapted for connection to a ship while its opposite end is pivotably mounted about a horizontal axis at a given level above the quayside, said flight of steps also being mounted for pivotal movement about a vertical axis passing between its opposite ends at a location substantially spaced from its horizontal pivotal axis,

(b) means for swinging said first flight of steps about said horizontal pivotal axis,

(c) a second flight of steps adapted for mounting at one end adjacent said quayside to pivot about said vertical axis and extending upwardly from its pivotal mounting to interconnect with said first flight of steps enabling joint pivoting with the latter about said vertical axis,

(d) means for adjusting the length of said first flight of steps, and



(e) means for jointly swinging said first and second flights of steps about said vertical axis.

4,157,743

WORKING BASE ELEVATING APPARATUS

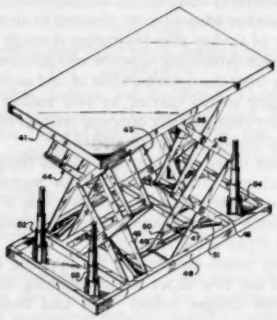
Akira Masuda, Matsudo; Takahiro Enoki, Zushi, and Toshifumi Kobori, Funabushi, all of Japan, assignors to Nisso Sangyo Co. Ltd., Japan

Continuation of Ser. No. 686,150, May 13, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,299

Claims priority, application Japan, May 15, 1975, 50-66363; Sep. 12, 1975, 50-125659

Int. Cl.[2] E04G *1/22*

U.S. Cl. 182—141 **4 Claims**



1. A scaffold device comprising a rectangular working member, a rectangular support base disposed below said working member, first and second longitudinal guide means adjacent respective sides of said base, first and second transverse guide means adjacent respective ends of said support base, first and second longitudinally operable pantographs pivotally connected between said base and said working member and having first longitudinal leg portions with lower ends pivoted to said base adjacent respective ends of said base and opposite second longitudinal leg portions movable in respective first and second longitudinal guide means, said first and second leg portions being movable longitudinally together to erect said pantograph with said working member and longitudinally apart to lower said pantograph and said working member in respect to said support base, first and second transversely operable pantographs pivotally connected between said working member and said support member and having first transverse leg portions with lower ends pivoted to said base adjacent respective sides of said base and opposite second transverse leg portions movable in respect to first and second transverse guide means, first and second fluid pressure operated longitudinally extendible piston and cylinder means connected between said support base and said second leg portions of respective longitudinally operable first and second pantographs, first and second fluid pressure operated transversely movable piston and cylinder means connected between said support base and said second leg portions of respective transversely operable first and second pantographs, and substantially upright fluid pressure operated telescopic members mounted on said base and being extensible above said base to lift said working member a predetermined initial amount into a position at which all of said piston and cylinder means engage their respective pantograph leg portions so that they are oriented at an angle in respect to the support base above the horizontal, wherein said first and second longitudinally operable pantographs and said first and second transversely operable pantographs are contiguously arranged with said second longitudinal leg portions movable in an area adjacent said first transverse leg portions and said second transverse leg portions movable in an area adjacent said first longitudinal leg portions, such that all of said piston and cylinder means are directed in the same direction so as to extend and contract together, as a system, either clockwise or counterclockwise in erecting or lowering said working member, and wherein said fluid pressure operated telescopic members are located exteriorly of said pantograph on said support base, said first and second transverse guide means having ends which abut against a side of said first and second longitudinal guide means.

4,157,744

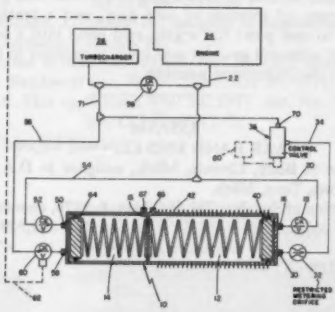
LUBRICATING AND COOLING ENGINE SYSTEM COMPONENT

Lawrence J. Capriotti, 44 Pearl St., Somerville, Mass. 02184

Filed Jul. 18, 1977, Ser. No. 816,581

Int. Cl.[2] F01M *1/16, 5/00*

U.S. Cl. 184—6.3 **7 Claims**



1. A system for pre-lubricating and post-shutdown cooling of an automotive engine system component, such as a turbocharger, comprising

a first tank having an oil inlet, an oil outlet, oil cooling means, and pressure means responsive to accumulation of oil in said tank to pressurize said oil therein,

a second tank having an oil inlet, an oil outlet, and pressure means responsive to accumulation of oil in said second tank to pressurize said oil therein,

input conduit means connected to supply oil to said inlets during engine operation,

first output conduit means connected between said first tank outlet and said component,

second output conduit means connected between said second tank outlet and said component, and

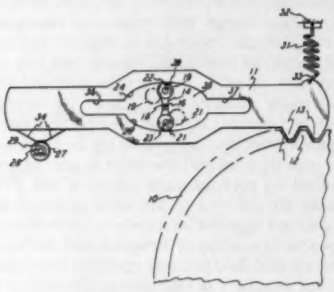
valve means normally preventing flow in said second output conduit means but responsive to engine cranking to permit flow from said second tank to said component.

4,157,745

PARK-LOCK MECHANISM FOR A VEHICLE TRANSMISSION

Carl D. Nelson, Ennis, Tex., assignor to J. I. Case Company, Racine, Wis.

Filed May 22, 1978, Ser. No. 908,128
Int. Cl.[2] B60T *1/06*
U.S. Cl. 188—31 **11 Claims**



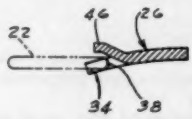
1. A park-lock mechanism for a vehicle transmission, comprising a rotatably mounted transmission gear having teeth thereon, a pawl movably mounted for movement in a first direction toward said gear to engage said gear teeth and restrain said gear against rotation and for movement in a second direction oblique to said first direction and away from said gear, a manipulable control member in contact with said pawl for moving said pawl in said first direction to releasably position said pawl in restraining position on said gear teeth, said control member being free of positioning said pawl when said control member is manipulated and thereby said pawl is free to move in said second direction and away from said gear under the influence of rotation of said gear, and a tension spring attached to said pawl for urging said pawl into a position of alignment with said gear for said control member to move said pawl into the restraining position.

4,157,746

BRAKE BAND END CONNECTION

Alexander S. Body, Livonia, Mich., assignor to D.A.B. Industries, Inc., Troy, Mich.

Continuation of Ser. No. 737,694, Nov. 1, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,929
Int. Cl.[2] F16D *49/08*
U.S. Cl. 188—77 R **5 Claims**



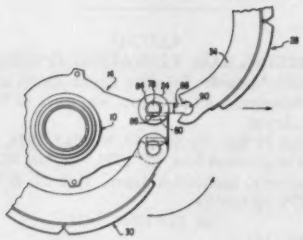
1. A brake band comprising a flexible, arcuate, transversely split friction band element having a pair of free ends normally spaced from one another, means on said band element adapted to be engaged by actuating means to contract said band element, said means including a bracket secured to the radially outer surface of said band element adjacent one of said free ends thereof, said bracket having a plate portion disposed in surface-to-surface contact with said radially outer surface of said band element and having an end adjacent said one free end of said band element, said plate portion having a marginal edge projecting radially outwardly from said outer surface of said band element to the outer surface of said plate portion, said marginal edge extending transversely of said band element and facing away from said one free end of said band element to provide an abutment surface for said actuating means, said plate portion having an integral tang bent up from said plate portion at a point between said abutment surface and said end of said plate portion, said tang having a locator portion extending beyond said abutment surface to its free end in a direction away from said end of said plate portion, said locator portion being spaced from said outer surface of said band element a distance equal to or greater than the radial extent of said abutment surface, said locator portion and said outer surface of said band element serving to locate said actuating means when in contact with said abutment surface.

4,157,747

BRAKE ASSEMBLY

John E. Getz, and Francis P. Tylenda, both of Grosse Pointe Farms, Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed Apr. 13, 1978, Ser. No. 896,030
Int. Cl.[2] F16D *65/09*
U.S. Cl. 188—341 **10 Claims**



1. A brake assembly comprising, in combination:

an anchor member adapted to be attached to an axle housing, and a pair of anchor pins projecting through said anchor member, each presenting opposite end portions projecting outwardly from the opposite sides of said anchor member;

brake actuating means carried by said anchor member in substantially diametrically opposed relation to said anchor pins for actuating said brake assembly;

a pair of brake shoes each having a pair of flanges which at one end thereof straddle said anchor member and seat upon the opposite ends of a respective one of said anchor pins, and each pair of flanges at their opposite end seating upon said brake actuating means;

return spring means connecting the opposite ends of said flanges of the two shoes for maintaining such opposite ends of the flanges seated upon said brake actuating means;

said opposite ends of the anchor pins being of D-shaped configuration to present a generally flat chordal face intersecting a cylindrical face which extends angularly through an arc of more than 180°, the one end of each flange having a C-shaped bearing surface pivotally embracing the D-shaped end of a respective anchor pin, each C-shaped bearing surface extending angularly through an arc of more than 180° and presenting a mouth whose width is at least as great as the smallest diametrical dimension of its associated end portion of an anchor pin; and

means for retaining each anchor pin in fixed position with respect to said anchor member such that said brake shoes must be swung out of engagement with said brake actuating means before said C-shaped bearing surfaces may be disengaged from said ends of the anchor pins.

4,157,748
APPARATUS FOR CONTROLLED TRANSMISSION OF TORQUE BY MEANS OF A HYDRAULIC FLUID

Joseph M. E. Beaujean, Venlo, Netherlands, assignor to Bogey B.V., Venlo, Netherlands

Filed Jun. 21, 1977, Ser. No. 808,666
Claims priority, application Netherlands, Jun. 23, 1976, 7606849
Int. Cl.[2] F16D *35/00*
U.S. Cl. 192—58 B 15 Claims

1. A transmission apparatus capable of controlled transmission of torque by making use of the shear resistance in a laminar flow of hydraulic fluid in an active gap between the opposing active surfaces of two mutually rotating parallel bodies, comprising a torque-transmitting plate and a corresponding driven plate, one of said plates being perforated and having one side thereof disposed as an active surface and the other side as a non-active surface, and a flowpath communicating with the active plate surface through the perforations and the non-active side of the perforated plate, and the other of said plates having an opposing non-perforated active surface that is spaced apart from the active surface of the perforated plate by an active gap, wherein the active gap, the perforations, and the flowpath are so arranged and have such dimensions that the resistance to fluid flow in a radial direction through the active gap is several times the resistance to flow through the perforations and the flowpath in order to create and maintain in the active gap generally a tangential, laminar flow of the fluid without an effective radial flow component.

4,157,749
CLUTCH WITH FRICTION REDUCING LEVER ASSEMBLY

William H. Sink, Auburn, and Richard A. Flotow, Ft. Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Division of Ser. No. 661,889, Feb. 27, 1976, Pat. No. 4,034,836. This application Apr. 22, 1977, Ser. No. 789,913
Int. Cl.[2] F16D *13/46*
U.S. Cl. 192—99 A 2 Claims

1. In a clutch adapted to drivingly connect rotatable drive and driven members and having a central axis; an axially stationary cover element for securement to a drive member for rotation therewith; an axially movable pressure plate element connected to the cover element for rotation therewith and limited axial movement relative thereto; resilient means for urging the pressure plate element axially into engagement with the driven member to clamp the same to the drive member; and pivotally movable levers disposed between the cover and pressure plate elements for moving the pressure plate element axially relative to thercover element into and out of engagement with the driven member; the improvement comprising:

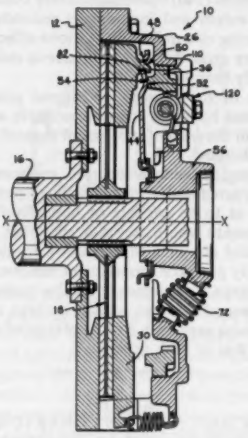
opposed radially spaced longitudinally extending pivot and bearing ribs portions on the levers;

a pivot engaging means integral and axially movable with the pressure plate element and engaging said pivot rib portion on the lever;

an opposed bearing engaging means integral and axially fixed with the cover element and engaging said bearing rib portion on the lever;

said pivot rib portion including an opening having spaced side walls and connecting radially inner and outer walls and a sharp knife-edge formed on said radially inner connecting wall;

said pivot engaging means including an axially directed lug extending axially outwardly away from the driven member and having spaced side walls and connecting inner and outer walls and a pivot axis formed on one of said connecting walls;

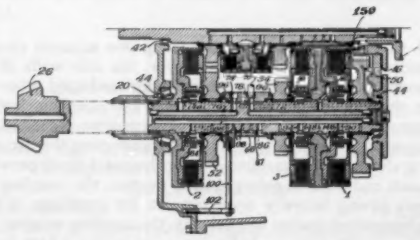


said lug extending into said opening with said sharp knife-edge engaging said pivot axis and said side walls and inner and outer connecting walls of said opening and lug coacting to define a positive restraint for said levers to prevent relative movement and maintain said sharp knife-edge in contact with said pivot axis during pivotal movement of said lever.

4,157,750
LUBRICANT COOLED FRICTION CLUTCH WITH TWO RATES OF FLOW

Joachim Horsch, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 599,801, Jul. 28, 1975, abandoned, which is a division of Ser. No. 471,539, May 20, 1974, Pat. No. 3,913,616. This application May 12, 1977, Ser. No. 796,105
Int. Cl.[2] F16D *13/72*
U.S. Cl. 192—113 B 9 Claims



3. Frictionally engageable, fluid cooled assembly for a multi-speed transmission having:

input and output members comprising a supporting shaft and supported gear means rotatably related therewith;

primary reciprocal piston means shiftably related to the shaft and having a fluid reaction plate at an adjacent side of the piston means;

friction engaging means about the shaft associated with the non-adjacent side of the piston means and frictionally

engaged during a shift of, and by, the piston means to establish a drive coupling the input and output members;

first passage means in the shaft for transmitting clutch cooling flow, including a primary, radially facing circumferential groove; and

primary reciprocal lube sleeve means closely fitting on the shaft generally inside the friction engaging means, sad primary reciprocal lube sleeve means formed with second passage means (140) communicatively connected with the engaging means and including a secondary radially inwardly facing circumferential groove effective to uncover the primary groove beneath the sleeve means by overlapping axially therewith;

at least one of the primary reciprocal piston means and sleeve means having a pressure movable area and having the other in the path of movement thereof, and abuttingly engaged thereby;

said sleeve means being a separate, replaceable part from, and constructed and arranged with respect to, the piston means so as to be capable of limitedly laterally sliding relative thereto where they abut such that, upon predetermined initial conjoint shift causing friction engagement and a freely partaken, consequent uncovering movement by one groove of the other, the valve transit primary flow path so opened into the second passage means is an exposed annular area with a circumferential length coextensive with that of both grooves.

4,157,751

SCRAPER-CHAIN CONVEYORS

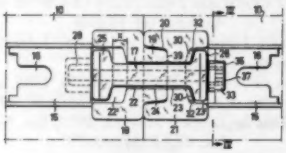
Dieter Gründken, Lunen, and Manfred Redder, Bergkamen-Oberaden, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,772

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636527

Int. Cl.[2] B65G *19/28*

U.S. Cl. 198—735 **11 Claims**



3. Connection means for connecting two adjacent channel sections of a scraper-chain conveyor, the side walls of the channel sections having a generally sigma-shaped cross-section, the connection means comprising: two coupling elements fastened to the outer sides of the adjacent ends of the channel sections, and a coupling member for connecting the two coupling elements, the coupling member having a shank provided at each end with an enlarged head portion, the coupling elements having laterally open recesses for receiving, with a predetermined amount of axial play, the coupling member, one of the coupling elements having a projection which mates, with an all-round clearance, with a recess in the other coupling element, one head portion of the coupling member having an axially extending locking member which extends behind a complementary locking member fastened to one of the channel sections, and the other head portion of the coupling member having locking projection means which co-operate with corresponding locking recess means in the adjacent coupling element, and a substantially C-shaped spring clip insertable into a V-shaped portion of the side wall of the other channel section to prevent axial movement of the coupling member by filling up the space available for said predetermined amount of axial play.

4,157,752

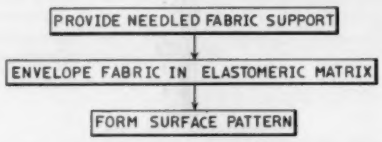
IMPRESSION SURFACE CONVEYOR BELTING AND METHOD OF MANUFACTURE

Paul J. Sick, Buffalo, and James W. Hazel, Youngstown, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,027

Int. Cl.[2] B65G *15/34;* B29G *5/00;* B32B *5/12, 3/00*

U.S. Cl. 198—847 **24 Claims**



1. A unitary mono-layer, impression surface conveyor belting, which comprises:

a plurality of substantially parallel textile yarns characterized by their high tensile strength, low stretch and uniformity of shrink;

a layer of fibrous material in the form of discrete staple fibers, said layer being consolidated through entanglement of the individual fibers and integrated with said yarns by entanglement of the fibers therewith, said entanglements being of the character produced by a needling operation; and

a matrix of a synthetic, non-cellular polymer substantially encapsulating the layer, individual fibers thereof and the integrated yarns;

said layer and said matrix together having an impression wear surface of raised matrix material containing a portion of the consolidated staple fibers in a bundle and which are continuously anchored in a portion of the non-isolated matrix material.

11. A conveyor belt manufactured from the belting of claim 1.

12. A method of manufacturing a non-laminated, impression surface conveyor belting, which comprises;

providing a plurality of substantially parallel textile yarns characterized by their high tensile strength, low stretch and uniformity of shrink; needling to said yarns a bat of discrete staple fibers;

heat setting the needled material;

impregnating the heat set material with a synthetic, non-cellular, flexible solid polymer forming liquid;

molding the impregnated material so as to obtain one planar surface thereof with discontinuous, raised portions of matrix encapsulating fibers of said layer; and

curing the liquid to cross-link the polymer.

4,157,753

CONVEYOR PLANT

Patrice Garnier, Barentin, France, assignor to Cidelcem, Paris, France

Filed Oct. 6, 1977, Ser. No. 840,166

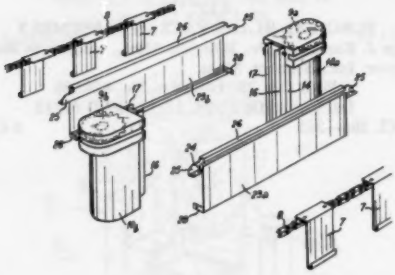
Claims priority, application France, Oct. 15, 1976, 76 31086; Oct. 15, 1976, 76 31087

Int. Cl.[2] B65G *43/02*

U.S. Cl. 198—856 **8 Claims**

1. A conveyor plant having a conveyor including movable elements for equipping the two surfaces of a wall having two apertures for the passage of the movable elements of the conveyor, said plant comprising in combination movable transport means; means for driving said transport means; two casings enclosing said driving means and adapted to be disposed in one and the other of said apertures of said wall, respectively; on

each side of said casings, jaw means adapted to engage the vertical edge of the corresponding wall aperture which is adjacent to the other aperture, and to be tightly clamped against said edge, and a pair of longitudinal frame members each having two ends and being adapted to be disposed against a respective surface of said wall, the ends of each frame member being adapted to be secured to the relevant casing when said casings are disposed in the corresponding apertures.



5. In a conveyor plant as set forth in claim 1, a safety device associated with each casing and comprising a control member adapted to be disposed along one edge of the relevant aperture formed in said wall and be actuated by one portion of the body of a person which might protrude within said aperture, said control member having an end carrying an actuator rod rigid with one end of a flexible blade having another end restricted to limited movement, a pair of electric switches being disposed on either side of said other end of said blade for controlling the shut-down of the corresponding plant.

4,157,754

PACKAGING FOR COMPRESSED FIBERS, FILAMENTS OR CABLED TOWS

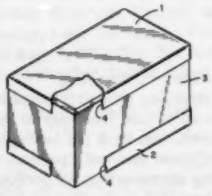
Rudolf Bartsch, Emmendingen; Bruno Bölter, Umkirch; Ulrich Köhler, Kirchzarten, and Josef Ritschel, Freiburg im Breisgau, all of Fed. Rep. of Germany, assignors to Deutsche Rhodiaceta AG, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Nov. 1, 1977, Ser. No. 847,576

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 7635849

Int. Cl.² B65D *71/00*

U.S. Cl. 206—83.5 **5 Claims**



1. A packing for compressed fibers, filaments or cabled tows which is subjected to an internal pressure of at least 0.2 daN/cm², free of outer holding means which comprises an outer wrapping made of several parts, the individual parts of the outer wrapping of the packing overlapping and being held to each other in their overlapping areas by means of an adhesive which imparts to the glued areas a shear strength of at least 0.39 daN/cm².

4,157,755

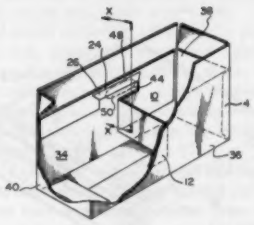
TOP LOADING COMPARTMENTED BEVERAGE CARTON

Michael R. Gough, London, Canada, assignor to Labatt Breweries of Canada Limited, London, Canada

Continuation-in-part of Ser. No. 722,544, Sep. 13, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,211

Int. Cl.² B65D *75/52*

U.S. Cl. 206—193 **11 Claims**



1. A top loading rectangular carton made of foldable sheet material, said carton comprising a carton shell and an article divider unit, the shell comprising in foldably connected relationship opposed pairs of sidewall and endwall panels, the top and bottom edges of the respective wall panels being provided with top and bottom closure flaps in foldably connected relationship thereto, one sidewall panel having in an upper central region thereof a hand hole for lifting the carton, the hand hole being closable by a flap hinged to the sidewall portion bordering the upper boundary of the hand hole, the divider unit comprising two divider end panels, one secured to the interior surface of each sidewall panel and joined by a center panel extending laterally across the carton, parallel to the carton endwall panels, to tie the sidewall panelstogether, one end panel having an elongate reinforcing portion secured to and extending over a major portion of the sidewall area between a line defined by the upper edge of the carton sidewall and a line parallel thereto and including the upper boundary of the hand hole, a generally trapezium-shaped tab having a longer and upper edge and a shorter and lower edge which edges are generally parallel to each other, and two sides, said tab being hingedly affixed along the upper edge via a hinge line to the central portion of the elongate reinforcing portion, each of said sides extending from the lower tab edge to a point short of said hinge line, said tab overlapping the whole length of the hand hole flap and having a length at least one and a half times the length of the flap and a width at least one third that of the flap, such that in a carrying condition the tab and flap coact to provide a corrugation of material of double thickness for the hand.

4,157,756

PLASTIC LAMINATE WALL COVERING KIT

Melvin A. Stratis, 138 Beach Dr., Edmonds, Wash. 98020

Continuation of Ser. No. 821,636, Aug. 4, 1977, abandoned, division of Ser. No. 698,951, Jun. 23, 1976, Pat. No. 4,052,835. This application Sep. 29, 1978, Ser. No. 947,205

Int. Cl.² B65D *79/00*

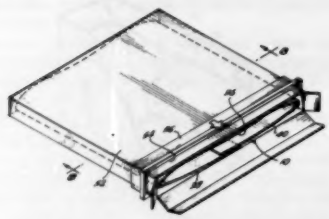
U.S. Cl. 206—223 **3 Claims**

1. A bathtub recess wall covering kit, comprising a normally rectangular cardboard box having a pair of oppositely situated major side walls, a pair of oppositely situated minor side walls, and a pair of oppositely situated end walls, together defining an inner space;

a one-piece preformed plastic laminate wall covering for such bathtub recess packaged within said cardboard box, said wall covering being formed from a single sheet of general purpose grade plastic laminate material approximately one-sixteenth inch thick having a normally U-shaped configuration comprising a pair of planar end walls

interconnected at rounded corners by a planar side wall, with said plastic laminate material comprising a decorative layer on the inside of said wall covering and a backing layer on the outside of said wall covering;

with said normally U-shaped wall covering being folded while in said box such that one end of said wall covering overlaps the other end wall within said cardboard box, and the central portion of said side wall of said wall covering is bowed inwardly from one of the major side walls of said cardboard box;



with portions of said backing layer of side wall and at least one of said overlapping end walls making a substantially tight frictional fit with internal wall portions of said cardboard box by virtue of the folded wall covering tending to resume its normally U-shaped configuration;

with the ends of said box being closed, wherein said tight frictional fit maintains said wall covering in a fixed folded configuration with said side wall thereof bowed inwardly; and

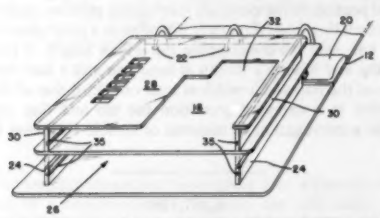
with said wall covering when so configured substantially fitting within the normal rectangular shape of said box.

4,157,757

COMPOSITE COVER-SUPPORT FOR ELECTRONIC EQUIPMENT AND INSTRUCTIONAL MATERIALS

John K. Gallaher, Jr., P.O. Box 10767, Salem Station, Winston-Salem, N.C. 27108

Filed Jan. 20, 1978, Ser. No. 870,943
Int. Cl.[2] B65D *85/38*
U.S. Cl. 206—328 **2 Claims**



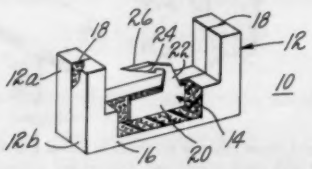
1. A loose-leaf ring notebook and support structure for functionally housing electronic components and instructional materials comprising: at least a pair of planar cover members joined together along a mutual fold hinge area and having inner surfaces; a first substantially flat support member proximate one of said planar cover members and movable with respect thereto; means supporting said first support member a fixed difference away from and substantially parallel to said one of said planar cover members; means hingedly and releasably retaining said first support member to said pair of planar cover members proximate said mutual fold hinge area; a second support member substantially parallel and adjacent to said first support member; means supporting said second member a fixed distance away from and substantially parallel to one of said planar cover members, said first and second members fixedly positioned each with respect to the other and movable relative to said planar cover members to cooperatively and functionally receive electronic components therebetween, said movably and releasably retaining means releasably securing instructional materials proximate said first and second support members and between said planar cover members, said electronic components being operably and releasably secured to said first and second member supporting means and including a microcomputer system, and said second support member recess enabling access to a computer keyboard.

4,157,758

SURGICAL BLADE PACKAGE ASSEMBLY

George J. Kozlowski, Jr., Billerica, Mass., assignor to Rudolph Beaver, Inc., Belmont, Mass.

Filed Oct. 25, 1977, Ser. No. 844,930
Int. Cl.[2] A61B *17/06, 17/32;* B65D *81/10*
U.S. Cl. 206—363 **5 Claims**



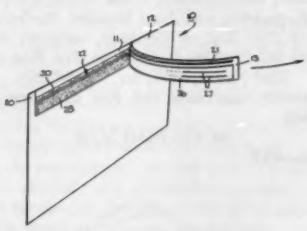
1. A surgical blade package comprising a base, a surgical blade having a support portion retained in the base, said blade having a tang extending upwardly from the support portion and away from the base, a cutting portion disposed on the end of the tang, and a pair of resilient legs extending upwardly from opposite ends of the base forming an open area therebetween so that the cutting portion is disposed in said open area.

4,157,759

CONTINUOUS MAILER

David Dicker, Scarsdale, N.Y., assignor to Transkrit Corporation, Elmsford, N.Y.

Filed Jul. 21, 1978, Ser. No. 926,625
Int. Cl.[2] B65D *27/34*
U.S. Cl. 206—610 **15 Claims**



1. A continuous mailer comprising

a front ply for receiving printed information thereon;

a back ply secured to said front ply to define an enclosed pocket therewith, said back ply having a main portion, a tab portion adjacent said main portion, a line of perforations extending across said main portion to separate said tab portion from said main portion, and an L-shaped slit between one end of said tab portion and said main portion to define a free flap at said end of said tab portion; and

a return mail envelope disposed in said pocket between said front and back plies, said return mail envelope including a first ply having a removable tab portion underlying and secured to said tab portion of said back ply for removal therewith, said second ply secured to said first ply to define a second pocket, said second ply having a tab portion underlying said tab portion of said first ply for folding

over onto said first ply after removal of said tab portion of said first ply, and adhesive means on aid tab portion of said second ply for sealing against said first ply.

4,157,760

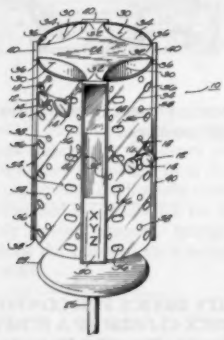
EYEGLASS FRAME DISPLAY DEVICE

Scott R. Wilson, Milwaukee, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Mar. 6, 1978, Ser. No. 883,710

Int. Cl.[2] A47F *7/00*

U.S. Cl. 211—13 **13 Claims**



1. A display device for a conventional eyeglass frame including a pair of lens holders separated by a bridge and further including a pair of laterally opposed side arms extending rearwardly from said lens holders, said device comprising,

a display panel having opposite longitudinal side edges,

an outer transparent panel having opposite longitudinal edges,

mounting means located along said longitudinal side edges of said display panel for removably receiving said longitudinal edges of said outer transparent panel and for supporting said outer transparent panel on and bowed outwardly relative to said display panel, and

display means defining outer support apertures in said transparent panel for receiving said side arms of at least one of said eyeglass frames and to position said pair of lens holders and said bridge adjacent to said outer transparent panel, said display means further including inner support means on said display panel arranged relative to said outer support apertures for engagement with and support of said side arms spaced from said outer transparent panel.

4,157,761

DISCHARGER MECHANISM

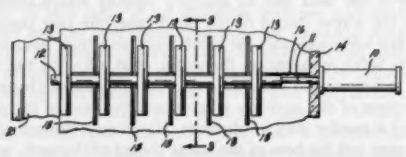
Harald H. A. Debor, Katevale, Canada, assignor to S. W. Hooper & Company, Ltd., Sherbrooke, Canada

Filed Aug. 4, 1977, Ser. No. 821,952

Claims priority, application United Kingdom, Feb. 2, 1977, 4210/77

Int. Cl.[2] B65G *65/44*

U.S. Cl. 414—304 **3 Claims**



1. A discharger assembly for positively discharging solid materials from the underside of a pile mounted on a substantially horizontal floor of a hopper or bin, the floor having a discharge location at one end thereof, said assembly comprising at least two discharge mechanisms of substantially the same size mounted on the floor adjacent one another, each discharge mechanism comprising

a single stoker rod extending beneath the pile, one end being a discharge end;

reciprocating means for reciprocating the stoker rod longitudinally, and comprising a stationary hydraulic cylinder mounted on a thrust member which operatively cooperates with said bin or hopper and a moving piston arm connected to one end of the stoker rod;

a plurality of stoker cross bars substantially perpendicular to the stoker rod, equispaced apart and rigidly attached at their centers thereof directly to the stoker rod;

each of the cross bars having a wedge shaped cross section with a vertical surface facing towards the discharge end and an upward sloped surface facing away from the discharge end at an angle less than 45°;

a plurality of fixed floor angles parallel and equispaced, each of the fixed floor angles interspaced and parallel with each of the cross bars such that a central cross bar is reciprocately moved between the floor angles adjacent thereto; and

each floor angle having in cross section an upward steeply sloped face facing toward the discharge end at an angle greater than 45°, and an upward sloped surface facing away from the discharge end at an angle less than 45°, and wherein the single stoker rod rests on bearing blocks located in a trough, and the stoker cross bars rigidly connected directly to the top portion of the stoker rod such that the bottom of said cross bars is located proximate to and just above the floor and trough; and

wherein the reciprocating means of the discharge mechanisms are adapted to reciprocate the corresponding stoker rods out of phase with one another.

4,157,762

OPEN-MOUTH CONTAINERS

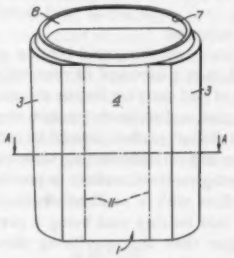
James D. Robinson, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 2, 1977, Ser. No. 856,984

Claims priority, application United Kingdom, Aug. 8, 1977, 33157/77

Int. Cl.[2] B65D *1/00*

U.S. Cl. 220—1 R **8 Claims**



1. An open-mouth container comprising:

(a) a body composed of at least two longitudinal protruding portions and at least two longitudinal inset portions, said protruding and inset portions having inner surfaces which define the inner surface of the body, and

(b) extensions of the protruding and inset portions of the body which extensions define the perimeter of the mouth of the container,

(c) wherein the inner surface of each protruding portion lies outside the perimeter of the mouth and the inner surface of each inset portion lies within the perimeter of the mouth so that the mouth-defining extension of each protruding portion extends inwardly of the inner surface of the body

and the mouth-defining extension of each inset portion does not extend inwardly of the inner surface of the body and

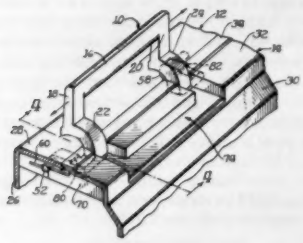
(d) wherein the dimensions of the inner surfaces of the protruding and inset portions are such that, if the inset portions were notionally removed from the body and the protruding portions were notionally moved inwards until they touched along their longitudinal boundaries, the notional inner surface defined by the inner surfaces of the touching protruding portions would then be capable of being passed through the mouth of the container.

4,157,763

ROTATABLE CARRYING HANDLE ARRANGEMENT

Frank W. Betlejewski, Elgin, and Robert A. Klein, Mount Prospect, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 2, 1977, Ser. No. 856,711
Int. Cl.[2] B65D *25/28*
U.S. Cl. 220—94 R **12 Claims**



1. A carrying handle arrangement for a projector housing or the like comprising:

a first housing portion including a pair of spaced bearing receivers each defining a receiver socket;

a carrying handle including an elongated base portion and two extending legs, each of said legs including an elongated bearing pin arranged to fit with said receiver sockets;

a second housing portion for mating engagement with said first housing portion to retain said handle within said receiver sockets; and

means for resiliently retaining said bearing pins within said receiver sockets in a frictional fit relationship and permitting rotation of said carrying handle about an axis through said bearing pins, said resilient retention means comprising an elongated slotted portion formed in each of said bearing receivers and interconnecting with each of said respective bearing receiver sockets to provide said bearing receiver sockets with a resilient characteristic and the diameter of said bearing pins being a predetermined dimension larger than the interfitting dimension of said bearing receiver sockets.

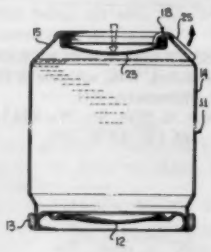
4,157,764

EASY OPEN BEVERAGE CAN—NON-DETACH

Jens L. Moller, Darien, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Aug. 1, 1978, Ser. No. 930,098
Int. Cl.[2] B65D *41/02*
U.S. Cl. 220—260 **12 Claims**

1. An easy opening container comprising a container component having a dispensing opening therein, a sealing element carried by said container component and defining said dispensing opening, and a closure element releasably retained by said sealing element, said closure element being disposed generally inwardly of the container relative to said sealing element with



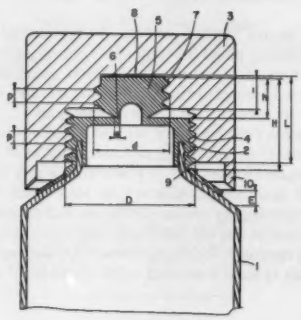
said sealing element preventing movement of said closure element out of said container.

4,157,765

INVIOLABILITY DEVICE FOR CONTAINER HAVING ITS NECK CLOSED BY A SCREW CAP

Francois Golebiewsky, Binarville, France, assignor to Cebal, Clichy, France

Filed Oct. 24, 1978, Ser. No. 954,110
Claims priority, application France, Oct. 28, 1977, 77 33345
Int. Cl.[2] B65D *41/02, 41/32*
U.S. Cl. 220—265 **9 Claims**



1. In an inviolability device for a container having a neck with an orifice therethrough and an external screw thread, a blind tube having an external screw thread and blocking the orifice, the open end of said blind tube being connected to the end of the neck by a weakened zone having a diameter which is smaller than that of the blind tube, a screw cap comprises a double tapping, a main tapping which complements the screw thread of the neck and an auxiliary tapping which complements the screw thread of the blind tube, the two tappings have the same axis and the same pitch and their associated threads being in harmony therewith, thus allowing the tappings to be screwed simultaneously, the distance (L) between the bottom of the auxiliary tapping and the base of the main tapping is smaller than the distance (H) between the end of the blind tube and the base of the screw thread of the neck, while the depth (l) of the auxiliary tapping is smaller than the height (h) of the blind tube, the cap screwing simultaneously on to the neck and the blind tube and butting first with the bottom of its auxiliary tapping against the closed end of the blind tube.

4,157,766

ARRANGEMENT FOR CAP-LIKE CLOSURE COVERS

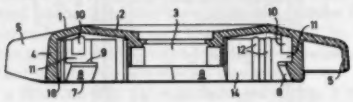
Theodor Gerdes, Langenfeld, Fed. Rep. of Germany, assignor to Blau KG Fabrik fur Kraftfahrzeugteile, Langenfeld, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,863

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733860

Int. Cl.[2] B65D *41/16*

U.S. Cl. 220—306 6 Claims



1. An arrangement for radially extending partition members insertable in the inside circumference of cap-like closure covers, or a sealing flange edge of a further cover part, comprising the use of strap projections emanating from the lower inside edge of the closure cap spread equidistantly over its circumference inwardly bevelled and rising towards the base of the cap in concentric circle having supports facing subsequently thereto radially against the cap wall for a radial fit mounting relative to the cap wall.

4,157,767

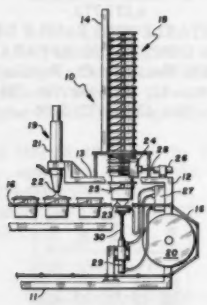
BAIL SEPARATOR FOR NESTED CONTAINERS

Gilmore T. Schjeldahl, 4436 Marlborough Ct., Minnetonka, Minn. 55343

Filed Jan. 18, 1978, Ser. No. 870,423

Int. Cl.[2] B65G *59/06*

U.S. Cl. 221—211 4 Claims



1. In a container delivering system for sequentially delivering individual containers from a nested stack, with said containers each having a generally rectangular cross-section body tapering toward a base, an upper outwardly extending rim and an outwardly projecting stacking shoulder formed along said body and spaced from said rim, and a generally semi-circular carrying bail secured to the periphery of said container at opposed sides thereof and along said body between said stacking shoulder and said upper rim and normally engaging the exterior of said body at an elevation between said stacking shoulder and the base thereof, of the type including stacking means for retaining a generally vertical column of said containers in nested relationship, means for intermittently delivering the lowermost container in said column onto a receiving surface, and a reciprocating bail orienting means for moving the bails associated with the penultimate and a predetermined number of other containers in succeedingly adjacent order in said column to a generally parallel disposition with respect to said receiving surface, the improvement comprising:

(a) means connected to said bail orienting means for applying an inward compressive force to the bail of one container which is a predetermined number above said penultimate container in said column.

4,157,768

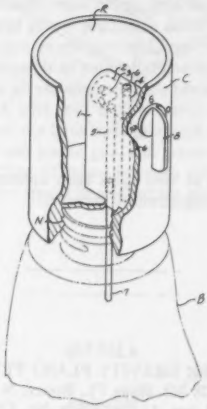
TRIPLE FUNCTION CLOSURE

William J. Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.

Filed Jun. 5, 1978, Ser. No. 912,657

Int. Cl.[2] B67D *5/22*

U.S. Cl. 222—42 3 Claims



1. A liquid dispensing closure for application to a resilient deformable container, which comprises:

a closure housing having a measuring reservoir formed therein for containing and measuring the liquid to be dispensed;

an external housing member, carried by said closure housing, having a squirt channel extending through its length and a measure channel adjacent to said squirt channel extending from the base of the external housing member to a point where it is intersected by a toggle member;

a toggle member, rotatably clamped within said external housing member in normaly fluid tight manner in a position to intersect said measure and squirt channels, having a straight bore extending there through so positioned that as the toggle member is rotated said straight bore will register with said squirt channel, and having an L-shaped bore forming a right angle and extending through said internal toggle member, and so positioned that as the toggle member is rotated said L-shaped bore will register with said squirt channel at a position distinct from that of the straight bore and squirt channel;

said measure channel being adapted at its base to receive and hold a dip tube for communication with the lower end portion of the container.

4,157,769

ON-SITE AGGREGATE MEASURE

Blaine F. Radel, P.O. Box 604, Hopkins, Minn. 55343

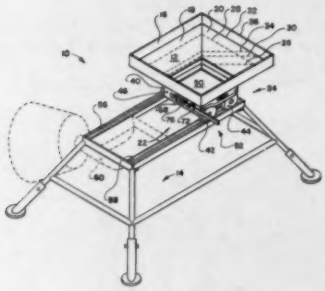
Filed May 16, 1978, Ser. No. 906,327

Int. Cl.[2] G01F *19/00*; B60P *1/56*

U.S. Cl. 222—43 9 Claims

1. An on-site aggregate measure comprising: in combination, a selectively moveable self-supported hopper guided on support means for moving the hopper between a position for receiving aggregate from an aggregate source and another position for gravity discharging the aggregate into a mixer spout by selectively moving at least a portion of said hopper and wherein said hopper includes at least one fill level indicia representative of a hopper fill of a predetermined measure, includes at least one opening for the introduction and emptying

of aggregate, and includes fractional part emptying means for emptying a said predetermined measure of aggregate in fractional parts such as two parts each approximately equal to one-half of the predetermined measure.



4,157,770

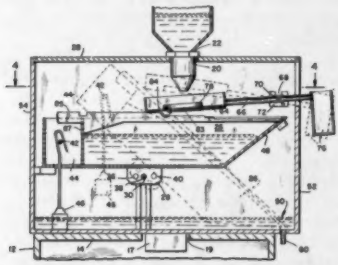
WATER GRAVITY PLANT FEEDER

Hans W. Roos, 225 Mt. Hope Pl., Bronx, N.Y. 10457

Filed Aug. 11, 1977, Ser. No. 823,587

Int. Cl.[2] A01G *27/00*

U.S. Cl. 222—70 **10 Claims**



1. A water gravity plant feeder, comprising, in combination, a base; a housing mounted on said base having a top wall provided with an opening wherein is a neck of an inverted water containing bottle, a front wall having a vertical slot, a rear wall, side wall and a bottom wall; a first valve for closing and opening the neck of said bottle, said first valve comprising a tube pivoted between said side walls and extending outwardly forward of the front wall through said slot with one end; an evaporation tray secured to said one end; an inner tray secured to the tube's other end positioned below said opening and provided with a sealing ring for closing the neck of said bottle; a trough mounted pivotably beneath said inner tray; a sump positioned in said housing below said trough; water from said bottle entering said inner tray, said tube, said evaporation tray and spilling over into said through and accumulating in said through; said valve and said trough being actuated in response to said evaporation tray becoming lighter, due to the evaporation within said tray; first water distributing means, secured to said front wall, for watering plants, and second water distributing means for watering plants, secured to the rear wall, both said distributing means communicating with said sump.

4,157,771

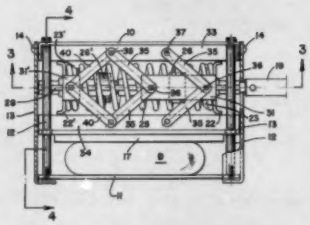
BAG COMPRESSING DEVICE FOR DISPENSING FLUID

Edward M. Smith, Pike Township, Knox County, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio

Filed Oct. 7, 1977, Ser. No. 840,314

Int. Cl.[2] B65D *35/28*

U.S. Cl. 222—103 **5 Claims**



1. Apparatus for pressurizing a flexible fluid-containing container comprising, a frame having a stationary plate and a pressure plate movable toward and away from said stationary plate to form a variable volume chamber therebetween, a tension spring, parallelogram linkage means operatively connecting the ends of said spring to said pressure plate for transmitting the spring tension thereto and substantially compensating for reduced tension as the pressure plate moves toward said stationary plate, a screw having opposite handed threads extending axially through said spring, and nuts on said threads adapted to axially expand the spring and move the pressure plate away from the stationary plate when the screw is rotated in one direction.

4,157,772

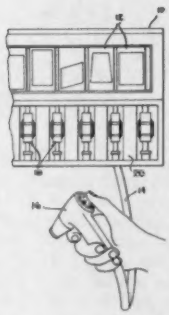
VOLUME ADJUSTABLE AND EASILY DISASSEMBLED FLUID DISPENSING APPARATUS

Clifford C. Carse, 500 Woodcrest Ct., Boulder City, Nev. 89005

Filed Apr. 11, 1977, Ser. No. 786,452

Int. Cl.[2] B67D *5/06*

U.S. Cl. 222—180 **6 Claims**



1. A fluid dispensing apparatus comprising:

a support structure for holding a fluid source;

means connecting said structure to a dispensing nozzle;

a pump mounted to said support structure for communicating said source of fluid to said dispensing nozzle, said pump including:

(a) a cylinder having freely but abuttingly related upper, lower and central portions;

(b) a piston having first and second sides linearally movable within said cylinder between first and second positions as a function of the selective application of pres-

sure to said first side and a biasing force to said second side;

(c) spring means positioned within said cylinder and bearing upon said second side of said piston for biasing said piston to its first position;

(d) an adjustment element threadedly mounted to said lower portion of said cylinder for varying the pumping volume of said cylinder;

(e) a second one-way valve including a spring, a valve element and a valve seat mounted within said adjustment element for passing fluid into said cylinder when said piston is moved by said biasing means from said second position to said first position and for blocking the passage of fluid when said piston is moved from said first position to said second position;

(f) a first one-way valve including a spring, a valve element and a valve seat located within and movable with said piston for passing fluid out of said cylinder when said piston is moved by the application of pressure from said first position to said second position and for blocking the passage of fluid when said piston is moved from said second position to said first position;

(g) a first fluid conduit communicating with said second one-way valve for passing fluid into said cylinder;

(h) a second fluid conduit connected to said piston for passing fluid out of said cylinder after said fluid passes through said first one-way valve;

(i) passage means for communicating a high pressure source to said first side of said piston to move said piston from its first position to its second position whereby said cylinder is filled with fluid when said piston moves from its second position to its first position and said cylinder is emptied of fluid when said piston is moved from its first position to its second position; and

(j) control means operable with said passage means for selectively opening and closing said passage means.

4,157,773

GREASE GUN

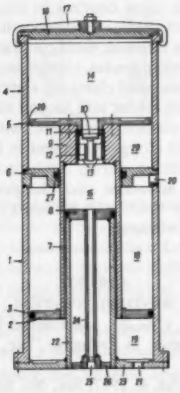
Otto Schetina; Herwig Wrulich, and Alfred Zitz, all of Zeltweg, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed May 18, 1977, Ser. No. 798,251

Claims priority, application Austria, May 25, 1976, 3836/76; Apr. 20, 1977, 2754/77

Int. Cl.[2] G01F *11/04, 11/16;* **F16N** *11/10;* **F04B** *5/00*

U.S. Cl. 222—263 **10 Claims**



1. A grease gun comprising: a hollow piston rod carrying at one end a grease plunger and at its other end an annular drive piston; a grease plunger cylinder surrounding said grease plunger and forming therewith first and second low pressure grease spaces on opposite sides of said plunger, said first space being located on the side of said plunger facing away from said drive piston, said cylinder being adapted to being filled with grease; a driving cylinder surrounding said drive piston and forming therewith first and second pressure fluid spaces on opposite sides of said piston, each of said pressure fluid spaces having a connection associated therewith for receiving pressure fluid; a stationary grease pressure arm fixed at one end to said driving cylinder and having at its other end a piston face located in said hollow piston rod so as to form a high pressure grease space therewith, said piston face being of lesser area than the area of said grease plunger; a relief valve connecting said high pressure grease space to said first low pressure grease space so as to be capable of passing grease from the latter into said high pressure grease space; a high pressure grease outlet conduit associated with said high pressure grease space for passing grease from the latter space through said pressure arm to the exterior of said grease gun; and grease throttling means for throttling the flow of grease between said first and second low pressure grease spaces in said grease plunger cylinder.

4,157,774

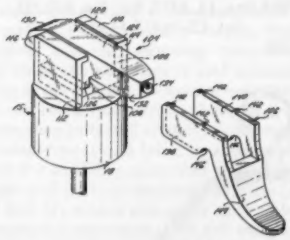
DISPENSING PUMP WITH TRIGGER ACTUATOR

Lewis A. Micallef, Fort Lee, N.J., assignor to Leeds and Micallef, Fort Lee, N.J.

Filed Oct. 10, 1975, Ser. No. 621,280

Int. Cl.[2] B05B *9/043*

U.S. Cl. 222—321 **16 Claims**



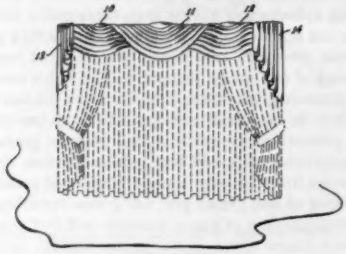
6. A reversible trigger for a dispensing pump of the type employing a reciprocal plunger having a passage therethrough a substantially horizontal base fixed to the pump and having two opposing side walls extending upwardly therefrom, a nozzle body coupled to the plunger, said nozzle body mounted between the upstanding walls and forming with the the opposing side walls two opposing channels open at both ends and including releasable trigger receiving and mounting means therein, the trigger comprising; a body portion of two opposing substantially parallel spaced prongs with each prong having a free end and having its other end integrally formed with an actuating gripping portion, the prongs including indexing and releasable mounting means for interengagement with surfaces in the channels formed on each side of the nozzle body so that the prongs can be simultaneously inserted from either open end of the channels into a removably mounted position on the plunger, the gripping actuating portion being positioned so as to extend outside of the channels and means on the trigger and nozzle body to permit pivotal movement of the trigger so as to actuate the plunger in a corresponding reciprocal movement as the trigger is pivoted.

4,157,775

APPARATUS FOR FORMING PLEATED MATERIALS

Enrique Soto, 1638 W. Washington Blvd., Los Angeles, Calif. 90007

Filed Aug. 1, 1977, Ser. No. 820,815
Int. Cl.[2] A41H *43/00*
U.S. Cl. 223—34 11 Claims



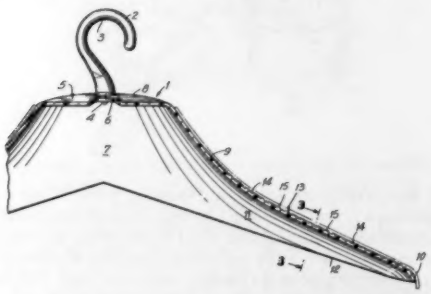
1. Apparatus for forming equally spaced pleats or folds in fabric material of a type adapted to form a fall of material suspended from above, including in combination, a platform, means including a plurality of spaced members carried by the platform and upstanding therefrom, means connecting said members whereby they can be adjusted relatively to a desired predetermined relative spacing with respect to each other, thereby adapting the members to have the fabric material laid over them with material folded over the individual members to form spaced pleats in the material, and said first means including means constructed for holding the uniform pleats after being formed.

4,157,776

CLOTHES HANGER

John E. Dolan, Old Orchard St., Harrison, N.Y. 10528

Filed Dec. 14, 1977, Ser. No. 860,743
Int. Cl.[2] A47J *51/093*
U.S. Cl. 223—92 2 Claims



1. A clothes drying hanger comprising a unitary, substantially enclosed, hollow plastic body having a central truncated conical section which extends vertically from its upper surface to a lower web for a distance of approximately one-half of the full vertical dimension of said hollow plastic body, and a pair of downwardly diverging arms;

said body including substantially spaced front and back walls curving from a normal vertical plane, the upper surfaces of each of said arms being upwardly convex in the transverse direction;

a substantial opening defined by said lower web of said enclosed hollow plastic body such that only a rim portion thereof remains which extends in an upward inclination toward the central vertical axis of the body;

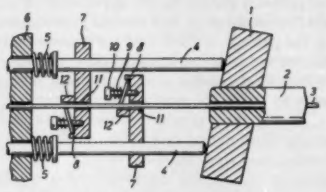
a series of transverse, closely spaced grooves in a substantially continuous, sinuous cross-sectional configuration along the length of said arms, said grooves being inclined along the length of said arms and being integrally formed to follow the transverse convex contour of said upper surfaces.

4,157,777

APPARATUS FOR ADVANCING AN ELONGATE ELEMENT

Wilhelm Tomasch, Halle, German Democratic Rep., assignor to Zentralinstitut für Schweisstechnik der DDR, Halle, German Democratic Rep.

Filed Sep. 30, 1977, Ser. No. 838,357
Claims priority, application German Democratic Rep., Sep. 30, 1976, 195054
Int. Cl.[2] B65H *17/36*
U.S. Cl. 226—112 6 Claims



1. Apparatus for advancing successive portions of an elongate element along its axis, said apparatus comprising: a first and a second elongate tappet arranged with their axes substantially parallel to the axis of said element; a swash plate arranged for rotation about the axis of said element and for cooperation with said tappets so as to cause the latter to reciprocate in their respective axial directions when said swash plate is rotated during successive operating cycles of the apparatus, said tappets being biassed into contact with said swash plate and having a first and a second engagement element respectively extending transversely of the respective tappet axis; a first and a second clamping element associated respectively with said first and said second engagement element; first and second resilient means associated with, so as to bias, said first and said second clamping element respectively so as to cause the latter to abut on the one hand against a plane of its associated engagement element, said plane being substantially perpendicular to the axis of said elongate element and, on the other hand, against said elongate element; each said engagement element having an abutment portion for said elongate element and the arrangement being such that, upon continuous rotation of said swash plate and consequent cyclical reciprocation of said tappets, said first engagement element, during a first portion of each of said successive operating cycles, clamps said elongate element between it and its associated clamping element and advances it in a required direction whilst said second engagement element with its associated clamping element, without gripping the latter, rides over said elongate element in the opposite direction to a position whence, during a subsequent portion of said operating cycle, it advances said elongate element in said desired direction by holding it clamped between it and its associated clamping element.

4,157,778

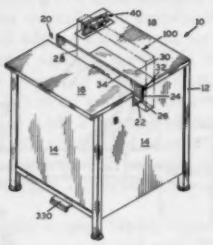
BINDING SYSTEM

George F. Villwock, Chicago, and Conrad R. Medina, Skokie, both of Ill., assignors to Swingline, Inc., Long Island City, N.Y.

Filed Oct. 4, 1977, Ser. No. 839,357
Int. Cl.[2] B27F *7/22*
U.S. Cl. 227—8 5 Claims

1. A binding system comprising a cabinet, a top on said cabinet, a first power operated stapler mounted on said top, a trough in said cabinet, a second power operated stapler

mounted below said top to one side of said trough for driving staples into a stack of sheets positioned with an edge in said trough, said top including a sliding section slidable to open and to cover the top of said trough, power means for operating said staplers, and interlock means operated by said slidable segment



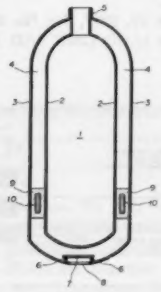
of said top for rendering said first power stapler inoperative and said second power stapler operative when said top section has been slid to open the trough and for rendering said first power stapler operative and said second power stapler inoperative when said sliding section has been moved to cover said trough.

4,157,779

PROCESS FOR PRODUCING A METAL VACUUM BOTTLE

Hiroshi Ishii, Tokyo; Masahiko Arashi, Chiba; Saburo Ishijima, Yokohama; Kenichi Miyaji, Chiba, and Yasuhiko Satomi, Yokohama, all of Japan, assignors to Nippon Sanso K.K., Japan

Filed Mar. 31, 1978, Ser. No. 892,113
Claims priority, application Japan, Oct. 20, 1977, 52-126225
Int. Cl.[2] B23K *1/12*
U.S. Cl. 228—176 **6 Claims**



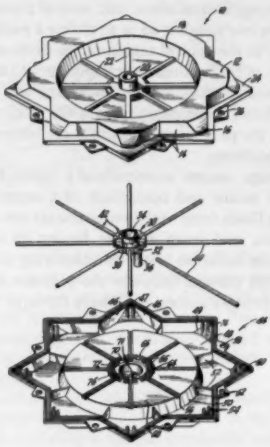
1. A process for producing a metal vacuum bottle composed of internal and external shells respectively made of metal in which a seam between said two shells is formed simultaneously with an evacuation between said two shells by a vacuum brazing operation, said process characterized in comprising a step of brazing an assembly of the vacuum bottle at said seamed portion thereof through a vacuum heating treatment, said assembly being formed in a predetermined shape and constructed by assembling the internal and the external shells together and accommodating a getter to be sealed between said two shells, and a step of enhancing the vacuum degree between said internal and the external shells by maintaining a temperature for a certain period of time at which said getter becomes active.

4,157,780

DISPOSABLE, ROTATABLE, STAR-SHAPED ENCLOSURE FOR USE WITH BLOOD WASHING APPARATUS

Edward W. Larrabee, Bronxville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 1, 1977, Ser. No. 847,447
Int. Cl.[2] B04B *15/06*
U.S. Cl. 233—14 R **21 Claims**



1. A disposable, rotatable, structure for use in centrifugal separation and washing of liquid-suspended particulate material, having enclosure means for insertion into the rotor of a centrifuge having means adapted and configured for releasably holding said enclosure means with said suspended material therein during rotation thereof about the vertical axis of said enclosure means, comprising in combination:

(a) a plurality of symmetrically shaped, liquid-suspended, particulate material receiving compartments evenly spaced about the periphery of said enclosure means and forming a part of said enclosure means, each of said compartments being symmetrical about an imaginary radial line extending from said vertical axis through the center of said compartment and lying in a plane normal to said vertical axis and being comprised of: (1) at least two opposite side wall portions symmetrical about said imaginary radial line; (2) at least one upper and one lower opposite wall portion symmetrical about said imaginary radial line and said normal plane, each of said opposite wall portions converging towards said imaginary radial line at said periphery of the enclosure and thereby defining a locus of maximum centrifugal force in each of said compartments at the apexes formed by the mutual convergence of said converging wall portions; and (3) an upper and lower annular wall portion within said enclosure, concentric with the center of said enclosure means, symmetrical about said normal plane and spaced apart from each other to define an annular port therebetween in fluid communication with said compartment, said upper and lower annular wall portions intersecting said upper and lower opposite wall portions, respectively;

(b) a fluid distribution means concentrically located within said enclosure means and comprised of a wheel-like disposable member having (1) an inlet port for receiving fluids introduced into said enclosure means; (2) a plurality of outlet ports in fluid communication with a plurality of independent conduit means capable of uniformly and symmetrically dispersing fluids into said compartments, each of said independent conduit means having one end thereof in fluid communication with said locus of maximum centrifugal force, and the other end thereof in fluid

communication with one of said outlet ports, each of said independent conduit means extending radially outward from one of said outlet ports into one of said compartments along one of said imaginary radial lines and terminating substantially at said locus; and (3) a concentrically located manifold chamber in fluid communication with said inlet port and said outlet ports, said distribution means defining a first fluid path within said enclosure means; and

(c) an upper and a lower plateau, concentric with the axis of rotation, symmetrical about said normal plane, and spaced apart from one another so as to define a passage from the periphery to the central region of the enclosure, the outer periphery of each plateau corresponding to the associated annular wall portion of the enclosure and said passage being in fluid communication with the receiving compartment, via the part formed by the space between the annular wall portions;

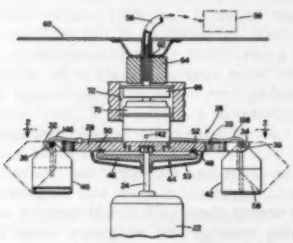
(d) a drainage means concentrically located within said enclosure means and comprised of a sump member for removing fluids from said compartments out of said enclosure means, said sump member having an outlet port in fluid communication with the receiving compartments through the passage between the plateaus, said drainage means defining a second fluid path through the enclosure means.

4,157,781

SELF BALANCING CENTRIFUGE

Hitoshi Maruyama, 205 Garden Spot Dr., Hagerstown, Md. 21740

Filed Jul. 19, 1978, Ser. No. 926,095
Int. Cl.[2] B04B *5/02*
U.S. Cl. 233—23 A **15 Claims**



1. A self balancing centrifuge, comprising:

a motor mounted on a support structure and having a vertical drive shaft;

a horizontal rotor mounted on said shaft and coupled thereto for spinning;

first and second sample containers supported, respectively, on opposite ends of said rotor;

means for distributing a balancing fluid selectively between said sample containers;

means for detecting any weight imbalance between said containers;

means responsive to said detecting means for disabling said motor and for controlling said fluid distributing means to balance said rotor and sample containers prior to spinning by said motor;

means for generating a command signal; and

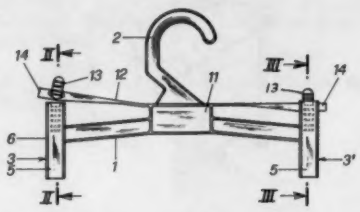
means responsive to said detecting means and said command signal for enabling said motor to spin said rotor only when said containers are balanced.

4,157,782

CLOTHES HANGER

Mario Mainetti, Valdagno, Italy, assignor to Mainetti S.A., Seclin, France

Filed Apr. 17, 1978, Ser. No. 897,015
Claims priority, application Italy, Apr. 18, 1977, 84124 A/77
Int. Cl.[2] A47J *51/14*
U.S. Cl. 223—96 **11 Claims**



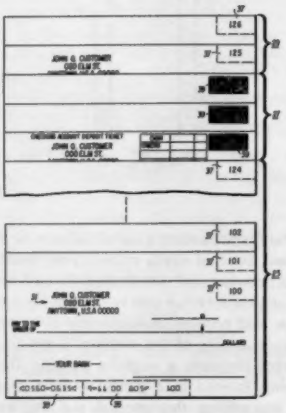
1. A clothes hanger comprising a cross member having a central suspension hook, a pair of clamps carried by opposite ends of the cross member and each having a pair of opposing claws in articulated relationship with arm extensions of the claws projecting above the points of articulation of the claws, a pair of flexible leaf spring elements connected with said cross member and extending thereabove and adjacent to the tops of said arm extensions, and a pair of rigid tapered spreading elements one for each clamp and engageable between the arm extensions of the clamps to thereby force the clamps into gripping engagement with an article of clothing inserted between said claws, said spreading elements being bodily mounted on said flexible leaf spring elements near free ends of the latter, and said clothes hanger formed as a unit from moldable material.

4,157,783

ITEM RESPONSIVE PRINT INHIBITING APPARATUS

Frank L. Muster; Henry M. Korytkowski, and Frederick H. Dear, all of Rochester, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 21, 1977, Ser. No. 844,476
Int. Cl.[2] G06F *15/30*; G06K *9/00, 3/00, 19/06*
U.S. Cl. 235—379 **10 Claims**



1. In a printing module of a modular document printing system which operates on a stream of documents fed through the module at a substantially constant rate, an apparatus for scanning the document stream for a print inhibit code on indi-

vidual documents and for inhibiting printing on a document by said module in response thereto, the apparatus comprising:

document sensing means in said module for sensing the lead edge of a document;

means coupled to said document sensing means for initiating a window interval of a first preselected duration in response to the sensing of a document lead edge;

document scanning means in said module, activated by the sensing of a lead edge of a document, for sensing indicia on said document during the duration of said window interval and for generating an output signal in response to the sensing of indicia on said document, the duration of said output signal being a function of both the width of said indicia and said stream feed rate;

means coupled to said document scanning means for initiating a validation signal in response to said output signal; and

means for generating a print inhibit signal for inhibiting printing on said document by said module when the duration of said validation signal is equal to or greater than a second preselected time interval.

4,157,784

SAFEGUARD AGAINST FALSIFICATION OF SECURITIES AND THE LIKE WHICH IS SUITABLE FOR AUTOMATIC MACHINES

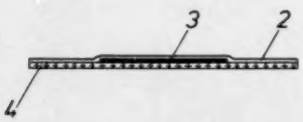
Helmut Gröttrup; Wittich Kaule; Thomas Maurer, and Gerhard Stenzel, all of Munich, Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Continuation of Ser. No. 595,427, Jul. 14, 1975, abandoned. This application Jun. 9, 1978, Ser. No. 913,942

Claims priority, application Austria, Jul. 26, 1974, 6178/74

Int. Cl.[2] **G06K** *19/06;* **G09F** *3/02;* **G06K** *19/02;* **B42D** *15/00*

U.S. Cl. 235—491 **7 Claims**



1. A valuable security and the like, having safeguard elements against forgery or falsification which can be mechanically examined using light of the visible, ultraviolet, or infrared spectral regions and which are effective, particularly, against erasure, and carrying the ink-impressed information print, said valuable security and the like comprising, in combination, a paper; and a homogeneous protective coating on the paper; the paper, the protective coating and the printing ink having respective light-detectable properties selected from the group consisting of reflectance and fluorescence properties; the respective light-detectable properties of the paper, the protective coating and the printing ink being such that any damage to the protective coating is detectable at a preselected wavelength of light; the reflectance of the protective coating at the wavelength used to read the information print being considerably greater than the reflectance of the printing ink, and the reflectances of the protective coating and the printing ink, at a different wavelength, being substantially equal, while the reflectances of the paper and the protective coating at said different wavelength differ measurably from each other.

4,157,785

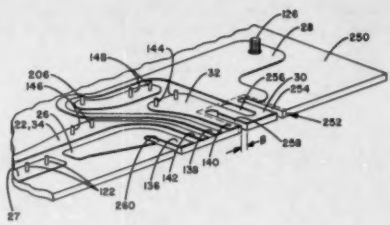
SAFETY CONNECTION FOR A RETROFIT FLUE DAMPER

Robert A. Freliech, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,946

Int. Cl.[2] **F23N** *3/00;* **G05D** *23/00*

U.S. Cl. 236—1 G **11 Claims**



1. In a furnace adapted to receive a retrofit flue damper, said furnace having a heat exchanger, heat source means for supplying heat to the heat exchanger, a flow path for flue gases which is adapted to be regulated by a flue damper, a sensing means for determining when heating is required and a retrofit flue damper; an improved flue damper safety arrangement which comprises:

a furnace control circuit being adapted to receive the appropriate connections for the retrofit flue damper, said control circuit including a jumper conductor connecting the sensing means with the heat source means such that when heat is required the heat source means is energized through the jumper conductor;

a flue damper circuit having means to open and close the flue damper and means for determining if the flue damper is in the open position; and

connecting means between the furnace control circuit and the flue damper circuit such that the configuration of the connecting means requires removal of the jumper conductor before the furnace control circuit is connected to the flue damper circuit, said jumper conductor removal requiring the means for determining if the flue damper is in the open position to determine that the flue damper is open prior to the heat source means being engaged by the sensing means whereby upon connection of the flue damper, the heat source means may not be engaged unless the flue damper is in the open position.

10. A method for assuring that a retrofit flue damper to be added to a furnace having a sensing means for determining when heating is required and a heat source means for supplying heat, a flue damper having a flue damper circuit which prevents the heat source means from being energized if the flue damper is not in the open position, is properly installed which comprises the steps of:

providing a furnace control circuit connecting the heat source means to the sensing means, said circuit being adapted to receive a retrofit flue damper circuit; and

preventing the electrical connection of the flue damper circuit to the furnace control circuit if the heat source means remains connected to the sensing means within the furnace control circuit.

4,157,786

THERMOSTATIC GAS VALVE

Frank H. Bergquist, Clarendon Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed May 31, 1977, Ser. No. 801,923

Int. Cl.[2] **F16K** *35/00;* **F23N** *5/02*

U.S. Cl. 236—15 A **11 Claims**

1. A gas valve comprising:

a valve body including an inlet adapted to be coupled to a

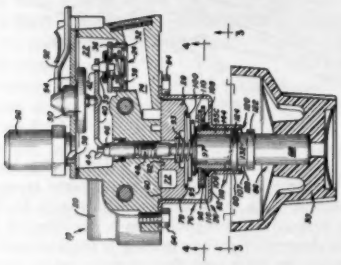
source of gas and an outlet adapted to be coupled to a gas utilization device;

a rotatable gas flow control element mounted in said body and between said inlet and outlet for controlling the flow of gas into said body;

a thermostatically actuated valve coupled to said outlet for controlling the volume of gas flow therethrough;

means for operating said thermostatically actuated valve to a selected temperature setting;

means axially actuable from a first to a second position for rotating said control element to a preselected position



thereby controlling said volume of gas flow and axially actuable to a third position for operating said temperature setting means;

means for manually operating said actuable means; and

a locking element including a first portion engaging said actuable means for preventing rotation of said actuable means in said first position and a second portion engaging said actuable means for preventing axial movement of said actuable means from said second to said third positions prior to rotation of said actuable means in said second position.

4,157,787

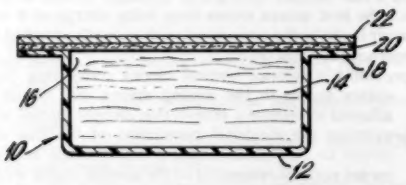
AIR FRESHENER DISPENSER

Burton Schwartz, Morris Plains, N.J., assignor to Milpak Incorporated, Plainfield, N.J.

Filed Aug. 23, 1977, Ser. No. 827,022

Int. Cl.[2] A61L *9/04*

U.S. Cl. 239—56 **5 Claims**



1. A dispenser comprising a container for containing therein a material which vaporizes upon exposure to the ambient atmosphere, said container having an opening at its upper end and a peripheral flange surrounding said opening, a first layer of a material having a multiplicity of fine aperatures therein secured to said peripheral flange and covering said opening, and a second nonporous layer, being the same size as said first layer and being releasably secured to an upper surface of said first layer for sealing said aperatures in said first layer, whereby said first layer retains the material within said container and said second layer seals said container to permit storage of said material.

4,157,788

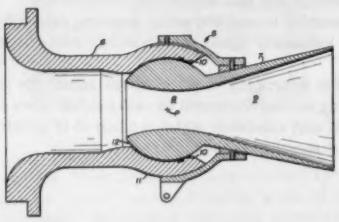
LOW FRICTION, MOVABLE, ROCKET NOZZLE

Alan R. Canfield, North Ogden; Lawrence C. Faupell, Logan, and Stanley H. Cardall, Providence, all of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Aug. 1, 1977, Ser. No. 820,954

Int. Cl.[2] B64C *15/04, 15/08*

U.S. Cl. 239—265.35 **7 Claims**



1. In a rocket nozzle having a movable member, which includes a venturi throat and an expansion cone, attached, via a ball-and-socket joint, to an annular, stationary member attachable to a rocket, the improvement comprising a thin, narrow, annular bearing seal made of lubricous fibers filled with a solid, lubricous resin, having a convex bearing surface and its other surface being fixed to one of the nozzle members, the bearing surface positioned to bear against a spherical surface of the other member and to support an axial blow-out load impressed on the movable member by propulsive gases of a rocket, whereby the bearing seal functions both as a low-friction bearing and as a gastight seal for containing hot, erosive gases of a rocket.

4,157,789

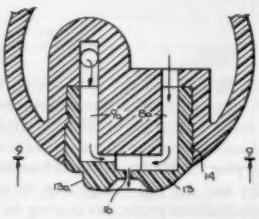
RIGHT-ANGLE SPRAY NOZZLE

Robert H. Laauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Filed Nov. 10, 1977, Ser. No. 850,197

Int. Cl.[2] B65D *1/32;* B05B *1/34*

U.S. Cl. 239—327 **7 Claims**



1. A nozzle for a container containing a liquid product and pressurized gas or vapor above the product, said nozzle comprising a hollow body having a closed top from which a skirt depends with an open bottom for exposure to said gas or vapor, said skirt being formed with a transversely inwardly extending cavity with a back wall through which two mutually interspaced holes are formed and a post extending forwardly from the back wall between the holes with a space surrounding the post, and means on the inside of said skirt for connecting one of said holes with a dip tube for the liquid; and a hollow insert having a front wall and a backwardly extending skirt adapted to be press-fitted into said space, the back of said front

wall and the forward end of said post cooperatively forming a swirl chamber having two tangential inlets and a discharge orifice formed through the insert's front wall, the insert's said skirt and said post forming passages respectively connecting the swirl chamber's said inlets each individually with one of said holes so that said gas or vapor and said liquid are separately injected into said swirl chamber.

4,157,790

PRODUCTION OF LOW-FILLER RUBBER POWDERS BY THE GRINDING PROCESS

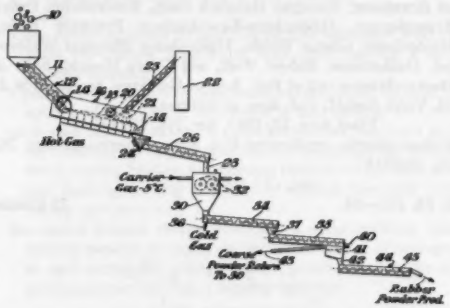
Otto Benn, Bergisch Gladbach; Rolf Cornils, Marne, and Gerhard Giersiepen, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,261

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648301

Int. Cl.[2] B02C *23/06*

U.S. Cl. 241—22 **3 Claims**



1. A process for the production of rubber powder having a particle size of from 200 to 1500 μm and a powdering agent content of less than 7% by weight, which comprises converting the rubber by preliminary mechanical size-reduction into surface-rich and pore-rich particles; spraying the entire quantity of powdering agent into a pneumatically delivered stream of the rubber particle so that the powder is almost completely adsorbed by the rubber particles and surrounding powdering agent is delivered to the grinding operation with substantially uniform distribution between the powdered rubber particles; grinding the rubber particles at low temperature so that the rubber is prevented from flowing and the surface-rich and indentation-rich structure of the rubber powder particles formed by grinding is kept intact; allowing non-adsorbed or freshly introduced powdering agent to be adsorbed by the rubber powder in a pneumatic delivery zone following the grinding zone; and cooling the powdered rubber powder obtained to such an extent that no warm flow of the rubber occurs.

4,157,791

YARN WINDER

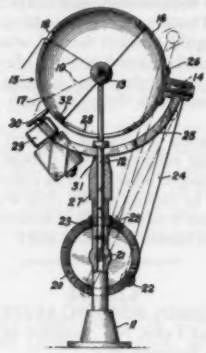
Douglas L. Meister, 46 Linda Ave., Fairview, Pa. 16415

Filed Jul. 29, 1977, Ser. No. 820,093

Int. Cl.[2] B65H *54/64*

U.S. Cl. 242—2 **5 Claims**

1. A yarn winder comprising,
a support,
a stem rotatably fixed to said support,
a ring gear and pinion adapted to rotate the stem relative to said support,
a yoke adapted to support a sphere,
a sphere having a fixed hemisphere and a rotatable hemisphere,
said fixed hemisphere being fixed to said yoke and said rotatable hemisphere being rotatable about an equator line of said fixed hemisphere,
said stem extending through a slot in said fixed hemisphere and a slot in said yoke,
a spool on said stem inside said sphere,
a connecting rod,
pivot means connecting a first end of said connecting rod to said yoke and a second end of said connecting rod connected to said ring gear adjacent the periphery thereof,



rotating means on said yoke driving said rotatable hemisphere along said equator line,
a hole in said rotatable hemisphere disposed on a radius displaced approxmately five (5) degrees from a radius perpendicular to said equator,
said hole being adapted to receive a thread to be wound on said spool,
said equator of said sphere being adapted to rock relative to said stem as said pinion rotates said spool whereby said thread is distributed over said spool.

4,157,792

TRANSPORT MECHANISM FOR CHANGING BOBBINS IN A WINDING-UP APPARATUS FOR WIRE

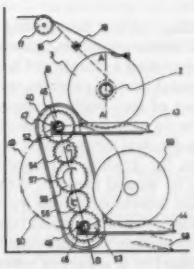
Jozef Wyckhuys, Meulebeke, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Jun. 20, 1977, Ser. No. 808,172

Claims priority, application United Kingdom, Jun. 21, 1976, 25722/76

Int. Cl.[2] B65H *54/02, 67/04*

U.S. Cl. 242—25 A **9 Claims**



1. A winding-up apparatus comprising a shaft, arranged for extending through the core of a bobbin, rotatable mounted at one end of the shaft and arranged for reception and removal of said bobbin, via the other end by translation of said bobbin in axial direction, the apparatus comprising:
(a) a carrier support member having first and second bobbin carriers mounted thereon, the carrier support member

being rotatable about an axis parallel to that of the bobbin shaft between first and second coincidence positions in which bobbins mounted on the first and second bobbin carriers respectively can be located coaxially with the bobbin shaft, the bobbin carriers being rotatably mounted on the carrier support member for rotation about axes parallel to, but offset from both the axis of the carrier support member and the core of a respective bobbin when mounted thereon;

(b) a positioning member, pivotable around an axis parallel to that of the bottom shaft, and linked by a transmission system to said bobbin carriers in order to have the latter to follow the angular position thereof, whereby pivoting the positioning member causes pivoting of each bobbin carrier between an upper position for locating a bobbin carried thereon coaxially with the bobbin shaft, and a lower position;

(c) and a translation mechanism for axial movement of the bobbin carriers relative to the bobbin shaft whereby a bobbin mounted on a carrier in its coincidence and upper position may be moved axially from a position in which the bobbin core is substantially traversed by said shaft for removing said bobbin from said shaft.

4,157,793

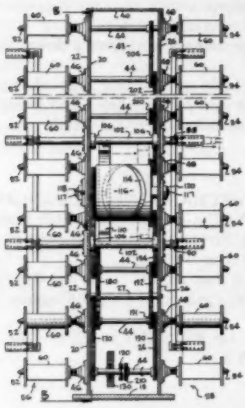
BOBBIN WINDING SYSTEM

Jack S. Lucia, Fair Lawn, N.J., assignor to Independent Machine Company, Paterson, N.J.

Filed Aug. 3, 1977, Ser. No. 821,755

Int. Cl.[2] B65H *54/20*

U.S. Cl. 242—35.5 R **14 Claims**



1. A thread winding system comprising a main support means, a plurality of bobbin supporting members on said main support means for supporting a plurality of bobbins for rotation about parallel horizontal axes of rotation, at least one bobbin mounted on each end of said bobbin support means, bobbin drive means for rotating said bobbins about their respective axes of rotation, an individual thread guide positioned adjacent each of said bobbins for guiding a respective thread to its respective bobbin to be wound thereon, thread guide support means supporting said individual thread guides for reciprocation adjacent their respective bobbins and thread guide support drive means for reciprocating said individual thread guides in unison on a path parallel to said axes of rotation, wherein said bobbin support means includes a plurality of bobbin support shafts each having coaxial first and second shaft end portions each respectively extending in opposite directions from said main support means and each shaft end portion respectively supporting a bobbin for rotation, said shafts being arranged in horizontal and vertical rows, said main support means comprises a vertically extending support column housing having a front panel, a rear panel and an internal chamber defined between said front panel and said rear panel, said bobbin shafts including a central shaft portion extending through said internal chamber with said shaft end portions extending outwardly of said front and rear panels, said bobbin drive means includes power transmitting closed loop type flexible drive means mounted in said internal chamber drivingly connecting said bobbin shafts and said thread guide support means comprises a rigid thread guide support frame consisting of a set of vertical rods and a set of horizontal rods respectively extending between said horizontal and vertical bobbin shaft rows.

4,157,794

DEVICE AND METHOD FOR ROLLING UP CONTINUOUS SHEETS

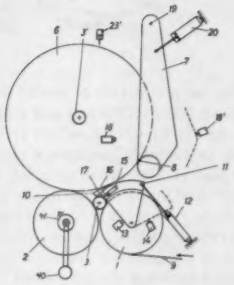
Kurt Brandauer, Giengen; Heinrich Flaig, Heidenheim; Franz Krautzberger, Heidenheim-Grosskuchen; Friedrich Kuhn, Heidenheim; Günter Rohde, Heidenheim; Hartmut Waldvogel, Heidenheim; Robert Wolf, and Georg Honold, both of Herbrechtingen, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Aug. 22, 1977, Ser. No. 826,465

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638368

Int. Cl.[2] B65H *17/08*

U.S. Cl. 242—66 **23 Claims**



1. A rolling device for rolling up sheet material, comprising:

two supporting rollers arranged near to each other and defining a gap therebetween of a width with respect to the width of a roll former such that a roll former may be supported on both said supporting rollers over the gap; one of said rollers being the rearward roller with respect to the direction in which sheet material is fed to said rollers and the sheet material passes around said rearward roller and is then wrapped about a roll former supported on said supporting rollers; means for rotating a roll former supported on said rollers;

roll lifting means for engaging a finished roll that was wound about a roll former and that is supported on said supporting rollers and for lifting the finished roll off said rear roller and for moving the finished roll further toward said front roller while the sheet material still remains attached to the finished roll, thereby to cause the sheet material to form and define a section of the sheet material to be looped around a portion of and then attached to another roll former that is supported on said supporting rollers over the gap;

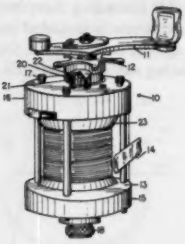
means for attaching the sheet material at the section thereof to the other roll former.

4,157,795

FISHING REEL

Lenord H. Turner, 387 N. 3rd St., Cocoa Beach, Fla. 32931

Filed Nov. 25, 1977, Ser. No. 854,820
Int. Cl.[2] A01K *89/02*
U.S. Cl. 242—84.5 R 6 Claims



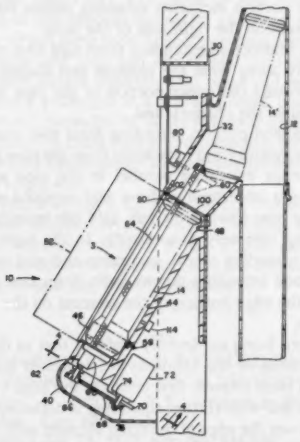
1. A fishing reel, comprising in combination:
a casing;
a line spool mounted to said casing and having at least one shaft protruding therefrom, said shaft having a ledge formed thereon;
a pair of bearings being positioned on said shaft on said line spool and supporting said spool in said casing;
each said bearing having a cylindrical solid lubricant polymer bushing having an aperture therethrough encased in a metal casing having an aperture therethrough, said polymer bushing having an aperture smaller than said metal casing aperture; and
line spool tension means including a solid polymer spool tension member for varying the spool tension of said spool in said casing by changing the pressure applied to said solid polymer line spool tension member.

4,157,796

PNEUMATIC TUBE CONVEYOR DISPATCHER

Bruno D. Warmann, 15362 Fairlane Dr., Livonia, Mich. 48154

Division of Ser. No. 775,257, Mar. 7, 1977, Pat. No. 4,084,770.
This application Oct. 17, 1977, Ser. No. 842,579
The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.
Int. Cl.[2] B65G *51/28*
U.S. Cl. 406—31 1 Claim



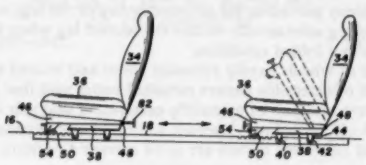
1. A pneumatic tube conveyor dispatcher for converting a free dispatch system to a controlled dispatch system and wherein the free dispatch system has an inlet opening through which a carrier may be inserted for passage into the delivery tube of the pneumatic system, said pneumatic tube conveyor dispatcher comprising:
a housing having a storage chamber for the receipt of said carrier, said housing having means for mounting said housing to said inlet opening such that said storage chamber is communicable with said inlet opening during a selected mode of operation;
an entry door carried by said housing to permit access to said storage chamber to deposit said carrier therein;
sensing means for detecting the number of carriers in said system;
an inlet opening access door disposed at the inlet opening for preventing communication between said storage chamber and said inlet opening; and
motor means for securing said inlet opening access door in a closed position, said motor means being operable in response to said sensing means during said selected mode of operation to permit the opening of said inlet opening access door to permit passage of said carrier from said storage chamber through said inlet opening into said tube.

4,157,797

SEATING ASSEMBLY FOR AIRCRAFT

Anthony Fox, 8306 Queen Ave. South, Minneapolis, Minn. 55431

Filed Nov. 17, 1977, Ser. No. 852,217
Int. Cl.[2] B64D *11/06*
U.S. Cl. 244—122 R 3 Claims



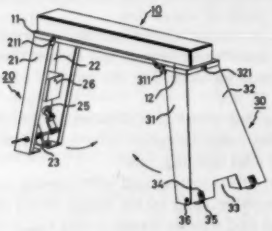
1. An aircraft seating arrangement comprising:
(a) at least one pair of parallel, spaced apart tubular rails having a rectangular cross-section and having a longitudinal slot formed in the upper horizontal surface thereof and a plurality of spaced apart detent notches extending laterally from said slot, said rails being affixed to the floor of the passenger compartment of an aircraft fuselage and running longitudinally therealong;
(b) a first generally rectangular platform having front and rear roller members attached in pairs to the undersurface of said first platform and along opposite side edges thereof and passing through said slot and into said tubular rails for cooperatively engaging said pair of rails allowing relative movement therealong;
(c) a second platform hingedly attached to the rear edge of said first platform, said second platform having a seat cushion on the upper surface thereof and first and second additional roller members attached to the underside of said second platform at the forward edge thereof and engaging the outer upper surface of said tubular rail members when said second platform is in its position parallel to the upper surface of said first platform;
(d) spring means disposed between said first and second platforms for rotating said second platform with respect to said first platform about said hinge attachment;
(e) latch means for holding the lower surface of said second platform parallel to the upper surface of said first platform against the force of said spring means; and
(f) means for releasably locking said seat frame to at least one of said pair of rails.

4,157,798

FOLDABLE SUPPORT FOR MACHINE TOOL

Chung-Jeno Lin, 2nd Floor, No. 7-2, Lane 27, Sec. 2, Chung Shan North Rd., Taipei, Taiwan

Filed Dec. 7, 1977, Ser. No. 858,348
Int. Cl.[2] F16F *15/00*
U.S. Cl. 248—647 **8 Claims**



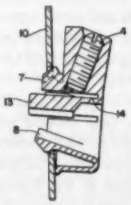
1. A foldable support for a machine tool comprising:
a base plate having a first width at a first end of the plate narrower than a second width at a second end of the plate;
a first leg having a third width at one end corresponding to the first width of said first end of the base plate and pivotably mounted at said one end of the first leg to said first end for folding thereunder;
a second leg having a fourth width at one end corresponding to the second width of said second end of the base plate and pivotably mounted at said one end of the second leg to said second end for folding thereunder;
said second leg being substantially U-shaped in cross section, thereby providing for an interleaving of the legs with the first leg substantially within the second leg when the legs are in a folded condition;
a pair of wheels fixedly mounted under said second leg; and
a pair of extensible casters mounted under said first leg;
wherein said pair of extensible casters and said pair of fixed wheels cooperate to permit rolling of said support when said extensible casters are in an extended position.

4,157,799

CABLE GROMMET WITH TRACTION RELIEF

Hans Simon, Bruchhausener Strasse, 5463 Unkel, Rhein, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 852,025
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653163; Jan. 7, 1977, 2700389
Int. Cl.[2] H01R *13/58*; F16L *5/00*
U.S. Cl. 248—56 **13 Claims**



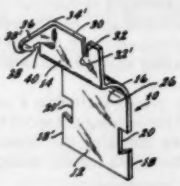
1. A strain relief cable grommet for securing a cable in a wall opening comprising a body member having means defining an opening through which a cable can be passed, said body member also having a threaded set screw receiving bore extending therethrough at an angle relative to the axis of said opening, said means including a flexible clamping jaw extending from said body member and having a length to extend through said wall opening and underlying said bore, a rigid shoulder extending from said body member and having a length to extend through said wall opening and overlying and spaced from said clamping jaw, said means also including a further and flexible shoulder extending from said body member, facing said clamping jaw and having a length to extend through said wall opening, both said clamping jaw and flexible shoulder having arcuate facing surfaces and an asymmetrical cross-section transverse of their axes with the thicker portion of one facing the thinner portion of the other whereby when the grommet with an inserted round cable extending therethrough is placed in the wall opening and a set screw is threaded into said bore to apply said clamping jaw against such a cable, the asymmetrical configuration of said facing surfaces alters the roundness of such a cable.

4,157,800

PIPE CLAMP

Robert L. Senter, 230 Termino, Long Beach, Calif. 90803, and Millard Andrich, 3265 W. Lambert Ln., Tucson, Ariz. 85704

Continuation of Ser. No. 712,234, Aug. 6, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 865,958
Int. Cl.[2] F16L *3/24*
U.S. Cl. 248—72 **5 Claims**



1. An element of a clamp used for affixing a pipe onto a channel extending perpendicularly to the pipe under the pipe, said clamp being of the type consisting of two identical unitary elements disposed facing each other on the right and left sides of the pipe and engaging the channel on the right and left sides of the pipe, extending around the pipe from opposite sides and interlocking to embrace the pipe to secure it to the channel, said element on the right side of the pipe comprising:
a first end portion including retaining means for engaging the channel on the right side of the pipe;
a concave midsection extending from said first end portion upwardly away from the channel and shaped to extend partly around the upper portion of the pipe to hold the pipe against the channel; and,
an opposite end portion extending from said concave midsection upwardly and outwardly from the pipe and including an edge extending parallel to the pipe and further including a tab extending from said opposite end portion over the pipe toward the left, said tab including a ramp extending obliquely downwardly to the right to an upwardly extending recess, said ramp and said recess forming a hook extending downwardly from said tab for engaging the edge portion of the element on the left side of the pipe,
said element being sufficiently resilient that as the opposite end portions of the elements are squeezed together, the ramp of each element first contacts the edge of the other element and with further squeezing is deflected upwardly to ride over the edge of the other element until the edge of each element snaps into the recess of the other element interlocking the elements over the pipe and securing the pipe to the channel.

4,157,801

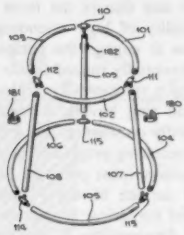
DEVICE FOR SUPPORTING A LIMP CONTAINER

Frederick L. Elmer, Anaheim, Calif., assignor to Pacific Handy Cutter Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 779,087, Mar. 18, 1977, abandoned. This application Sep. 16, 1977, Ser. No. 833,964

Int. Cl.[2] B65B *67/12*

U.S. Cl. 248—97 **1 Claim**



1. A trash bag holder for supporting a limp disposable trash bag or the like in a generally open position to receive material and for preventing said container from collapsing as said material is inserted therein, the improvement comprising:

a top rim member comprising three top rim tubes of flexible light-weight normally straight plastic tubing having end portions thereof joined together to form a generally circular closed loop rim for releasably supporting upper marginal portions of said bag peripherally about an opening therein and for supporting said bag in an open position;

a base rim member comprising three base rim tubes of flexible lightweight normally straight plastic tubing having the end portions thereof joined together to form a generally circular closed loop rim,

a plurality of vertical strut members comprising three vertical strut tubes, each formed of a length of normally straight rigid light-weight plastic tubing, for supporting said top member spaced above said base rim member and maintain a desired spaced relationship therebetween;

means for releasably and manually securing said rim member, said base member and said plurality of strut members together in press fit interconnections to provide a rigid light-weight support device for said bag, comprising six connecting tees, each having three studs located in tee configuration for fitting into said tubular members;

retainer clips removably attachable to said vertical strut members of said support device for clamping portions of said bag which have been folded over said top rim member between said clips and one of said strut members of said support device whereby said tubes and tees may be conveniently packaged in a non-assembled condition for shipment and thereafter be easily manually assembled and disassembled by press fitting said tubes and tees together and thereafter disassembled by manually pulling said tubes and tees apart; and

individual filament means for securing each of said clips to one of said members respectively to facilitate location of the same when not attached to one of said vertical strut members, as when said clips are manually detached during replacing of said bag relative said holder.

4,157,802

RIGID THERMALLY STABLE STRUCTURE FOR SUPPORTING PRECISION DEVICES

William G. May, Jr., Fairport, N.Y., assignor to Burleigh Instruments, Inc., East Rochester, N.Y.

Filed Jul. 15, 1977, Ser. No. 816,060

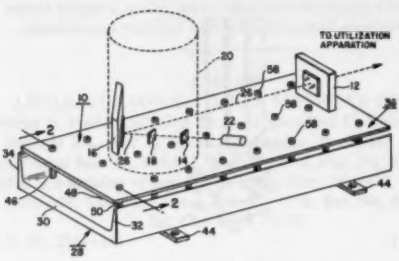
Int. Cl.[2] A47B *91/00*

U.S. Cl. 248—346 **14 Claims**

1. A structure for supporting and maintaining devices in precise positional relationship with respect to each other, said structure comprising

a rigid base member,

a plate which is flexible about the plane thereof when unsupported, said plate consisting of material having a coefficient of thermal expansion much lower than the coefficient of thermal expansion of said base member, and



an array containing a plurality of posts extending vertically between said base member and said plate and said posts being attached at opposite ends to said plate and to said base member and maintaining and supporting said plate rigidly in the plane thereof.

4,157,803

FISHING ROD HOLDER

Raymond S. Mack, Rte. 1, Box 53, Effingham, S.C. 29541

Filed Jan. 21, 1977, Ser. No. 761,289

Int. Cl.[2] A01K *97/10*

U.S. Cl. 248—512 **3 Claims**

1. A fishing rod holder for attachment to the gunwales of a boat comprising an elongated body adjustable in length and configured to extend between the gunwales of a boat, leg means at each end of said body, support means affixed to each gunwale of said boat and configured to removably receive said leg means and support said elongated body, a plurality of rod holders affixed to said elongated body, each of said holders being dimensioned to receive and support a fishing rod therewithin and clamping means selectively operable to clampingly secure the handle of a fishing rod within said holder.

4,157,804

FISHING ROD HOLDER

Robert Byford, 7756 California-Apt. 514, Riverside, Calif. 92504

Filed Dec. 27, 1977, Ser. No. 864,160

Int. Cl.[2] A01K *97/10*

U.S. Cl. 248—512 **3 Claims**

1. A portable fishing rod holder assembly for holding a plurality of fishing rods on a boat, said assembly comprising:

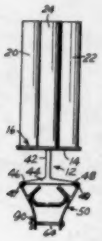
an elongated, flat, horizontal platform member;

a plurality of hollow tubular holders mounted on the top surface of said platform member and projecting upwardly therefrom, said tubular holders being spaced apart from one another along the lengthwise dimension of said platform, each of said hollow tubular holders being open at the top end to receive the handle end of a fishing rod;

at least two clamping brackets connected to said platform member and attachable to a railing of the boat to securely anchor said assembly so as to allow unattended support of the fishing rods while fishing;

each of said brackets comprising two opposed hinged flange plates with one edge of each in spaced and aligned relationship with respect to each other and pivotally connected to said platform member;

two clamp members, one being attached to the inside face of one of said flange plates; and the other being attached to the inside face of the other of said flange plates and



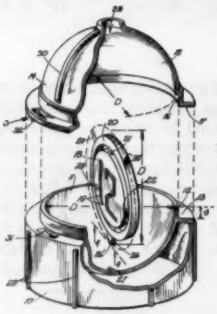
means connected to the free edge of each of said flange plates for moving said free edges of said plates toward each other, said clamp members engaging said railing on opposite sides thereof, and said moving means securing said clamp members on said railing.

4,157,805

MOLDING APPARATUS FOR A COMPOSITE BILLIARD BALL

Terry M. Haber, Costa Mesa, and Marlin D. Fernandez, Bloomington, both of Calif., assignors to Joseph L. Fernandez, Bloomington, Calif.

Filed Dec. 5, 1977, Ser. No. 857,297
Int. Cl.[2] B29C *1/00*
U.S. Cl. 249—91 **5 Claims**



1. A molding apparatus for manufacturing a shock resistant transparent polymer sphere in which a disc having a symbol on each of its opposite faces is diametrically incorporated in the sphere with the center of gravity of the disc coincident with the center of gravity of the sphere, comprising, in combination:

(a) a lower mold half defining an upwardly facing concave hemispherical surface, the upper exterior marginal wall of said lower mold half being cylindrical for a given vertical distance downwardly, thence extending laterally outwardly to define a flat annular upwardly facing shoulder;

(b) an upper mold half defining a downwardly facing concave hemispherical surface, the lower interior wall of said upper mold half having an increased diameter portion at the lower edge of said downwardly facing concave hemispherical surface defining an interior cylindrical wall extending downwardly beyond said edge said given vertical distance and thence laterally outwardly to define a flat annular downwardly facing shoulder for seating on said upwardly facing shoulder when said exterior marginal wall is received in said interior cylindrical wall so that the upwardly facing and downwardly facing concave hemispherical surfaces are juxtaposed to define a spherical cavity, said flat upwardly facing annular shoulder and said flat downwardly facing annular shoulder including cooperating fastening means for holding the mold halves together; and,

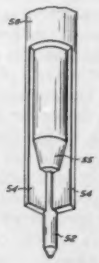
(c) a holder for said disc in the form of an annular ring having a plurality of lugs extending radially inwardly equal distances to engage the periphery of said disc at equal circumferentially spaced points to support said disc inside said ring in substantially coplanar relationship, the exterior of said ring having at least two locating pins extending radially outwardly, and a centering projection, said pins and centering projection being circumferentially spaced, the bottom-most point on said upwardly facing hemispherical surface having a hole receiving an end portion of said centering projection, and the top-most point on said downwardly facing hemispherical surface having a fill opening for introducing molding material, the diameter of said holder as measured out to the tips of said pins and the start of said end portion of said centering projection being substantially the same as the diameter of the hemispherical surfaces, whereby a shock resistant transparent polymer sphere incorporating a disc can be manufactured in a single mold material pouring operation.

4,157,806

APPARATUS FOR MAKING ELECTRICAL CONNECTOR INSERT

Normand C. Bourdon, and Richard Sanford, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 728,821, Oct. 1, 1976. This application Dec. 7, 1977, Ser. No. 858,305
Int. Cl.[2] B29D *31/00*
U.S. Cl. 249—184 **6 Claims**



1. An assembly adapted for use in making a molded electrical connector insert having a passageway with an integral retention cone and shoulders within the passageway, said assembly comprising:

a core pin and a core bushing; said core pin including a body, an axial projection extending from the body, a plurality of radially-extending fins mounted to the body, the axial projection extending beyond the ends of the fins, and a recessed portion between the fins, said recessed portion shaped to define the shape of the cone when molded; and said core bushing including a housing having an axially-extending bore and a plurality of slots extending axially along part of the length of the bare and communicating with the bore, said bore being adapted to receive the axial projection on said core pin and said slots being of shape and location for defining the shape of the shoulders on the insert when molded; and a portion at one end of the housing shaped to obtain a desired configuration of the cone in the molded insert.

4,157,807

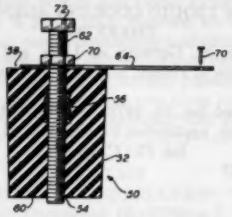
APERTURE FORMING DEVICES

John R. McCluskey, Unique Techinques, Inc., P.O. Box 68, Hannacroix, N.Y. 12087

Continuation of Ser. No. 580,871, May 27, 1975, abandoned, which is a continuation of Ser. No. 423,151, Dec. 10, 1973, abandoned. This application May 25, 1976, Ser. No. 689,954

Int. Cl.[2] B28B 7/28

U.S. Cl. 249—177 3 Claims



1. Aperture forming means of the type intended to be disposed within a hardenable plastic material while said material is in a substantially fluid state and, upon said material becoming substantially rigid, said forming means being removable from said material to thereby form therewithin said aperture, said aperture forming means comprising:

(a) an elastomeric body portion having top and bottom portions, the top portion being intended to be disposed adjacent to and accessible through the exposed surface of the plastic material;

(b) substantially rigid member means secured within said body portion;

(c) means for grasping said rigid member means, said grasping means extending from within and without said body portion for engaging said rigid member means and for removing said body portion and said rigid member means from the hardened plastic material; and

(d) locating means for securing to a form to thereby locate and receive therein said body portion within the plastic material.

4,157,808

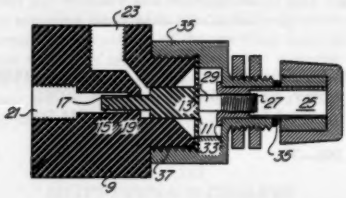
PRECISION FLOW CONTROLLER

Alva A. Eidsmore, Santa Cruz, Calif., assignor to Integrated Flow Systems, Inc., Sunnyvale, Calif.

Filed Nov. 14, 1977, Ser. No. 851,476

Int. Cl.[2] F16K 47/04

U.S. Cl. 251—205 8 Claims



1. Flow-controlling apparatus comprising:

a valve body having a pair of fluid ports spaced apart therewithin and having an aperture of selected diameter communicating with the fluid ports;

a valve stem disposed to fit within said aperture and having a dimesion larger than the selected dimension of said aperture of at least one of said valve body and valve stem being formed of a deformable, resilient material to facilitate interference fit of the valve stem within the aperture; said valve stem having a groove in the surface thereof which tapers in cross section with length along the valve stem;

a radially-extending flange on said valve stem forming a flexible diaphragm;

housing means disposed to clamp the outer periphery of said flange against the valve body to form a fluid-tight seal therewith and to clamp the flange against rotation relative to the valve body;

means coupled to the valve stem for selectively altering the translational position thereof within said aperture.

4,157,809

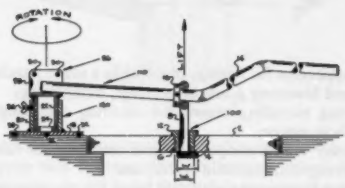
APPARATUS FOR LIFTING A MANHOLE COVER

George S. Haller, 359 Colt Dr., and Theodore C. Uphoff, 1298 Richard Rd., both of North Huntingdon, Pa. 15642

Division of Ser. No. 686,417, May 14, 1976, Pat. No. 4,076,217, which is a division of Ser. No. 561,863, Mar. 25, 1975, Pat. No. 3,957,247. This application Feb. 27, 1978, Ser. No. 881,401

Int. Cl.[2] B66F 11/00

U.S. Cl. 254—131 11 Claims



1. An apparatus for raising and lowering a manhole cover, comprising:

(a) means for engaging said manhole cover, comprising a pad, having a width W slightly less than a width W_1 of an opening near the center of said manhole cover, said pad having a lifting means secured near one edge, and said lifting means having a bushing slidably mounted thereon, said bushing having a width W_2 slightly less than said width W_1 of said opening in said manhole cover;

(b) a lever which cooperates with said first named means for raising and lowering said manhole cover; and

(c) means engageable with said lever for pivoting said manhole cover when in a raised position.

4,157,810

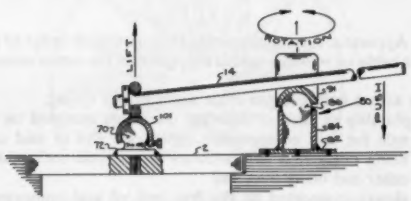
APPARATUS FOR LIFTING A MANHOLE COVER

George S. Haller, 359 Colt Dr., and Theodore C. Uphoff, 1298 Richard Rd., both of North Huntingdon, Pa. 15642

Division of Ser. No. 686,417, May 14, 1976, Pat. No. 4,076,217, which is a division of Ser. No. 561,863, Mar. 25, 1975, Pat. No. 3,957,247. This application Feb. 27, 1978, Ser. No. 881,402

Int. Cl.[2] B66F 11/00

U.S. Cl. 254—131 7 Claims



1. An apparatus for raising, pivoting in a plane parallel to the ground and lowering a manhole cover, comprising:

(a) a balljoint including means for securing said balljoint to said manhole cover;

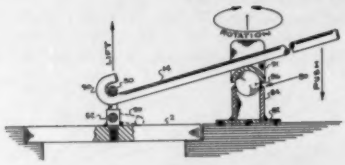
(b) a lever which cooperates with said balljoint for raising and lowering said manhole cover; and
(c) means engageable with said lever for pivoting said manhole cover, in a plane parallel to the ground, when in a raised position.

4,157,811

APPARATUS FOR LIFTING A MANHOLE COVER

George S. Haller, 359 Colt Dr., and Theodore C. Uphoff, 1298 Richard Rd., both of North Huntingdon, Pa. 15642

Division of Ser. No. 686,417, May 14, 1976, Pat. No. 4,076,217, which is a division of Ser. No. 561,863, Mar. 25, 1975, Pat. No. 3,957,247. This application Feb. 27, 1978, Ser. No. 881,403
Int. Cl.[2] B66F *11/00*
U.S. Cl. 254—131 10 Claims



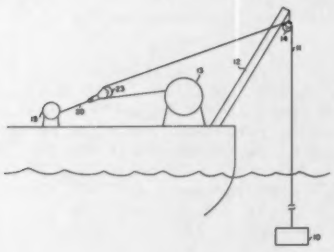
1. An apparatus for raising, pivoting in a plane parallel to the ground and lowering a manhole cover, comprising:
(a) a ring including means for securing said ring to said manhole cover;
(b) a lever which cooperates with said ring for raising and lowering said manhole cover; and
(c) means engageable with said lever for pivoting said manhole cover, in a plane parallel to the ground, when in a raised position.

4,157,812

SHIP MOTION COMPENSATOR FOR RECOVERY OF OCEANOGRAPHIC INSTRUMENTATION

Derek J. Bennett, Thousand Oaks, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 15, 1977, Ser. No. 824,725
Int. Cl.[2] B66D *1/48*
U.S. Cl. 254—172 2 Claims



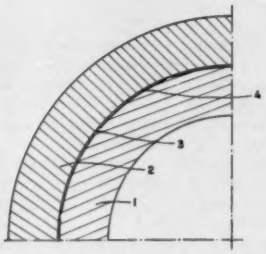
1. Apparatus for compensating ship motion in order to protect a cable by which a load is supported in the ocean comprising
an axle, a compensator cable and a power spring,
a plurality of reels of different diameters mounted on said axle for said compensator cable, one end of said cable being connected to a selected one of said reels and the other end being free, and
a sheave connected to the free end of said compensator cable, said load cable being reeved through said sheave, wherein
said power spring is so connected between said compensator cable reels and said axle as to exert a torque to said reels in a direction to wind said compensator cable on said selected reel whereby the tension on the load cable is maintained fairly constant, and said power spring is comprised of a flat strip of high-tensile metal spirally wound around said axle, said spirally wound flat strip having one end connected to said axle of said compensator cable reels, and the other end connected to said reels.

4,157,813

PROCESS FOR PROTECTING A METALLURGICAL TUYERE AGAINST WEAR WHILE MINIMIZING THE AMOUNT OF LIQUID COOLING AGENT SUPPLIED THERETO

Pierre J. Leroy, St. Germain en Laye, and Emile Sprunck, Moyeuvre, both of France, assignors to Creusot-Loire, Paris, France

Filed Jan. 18, 1978, Ser. No. 870,373
Claims priority, application France, Jan. 21, 1977, 77 01672
Int. Cl.[2] C21B *7/16*
U.S. Cl. 266—47 2 Claims



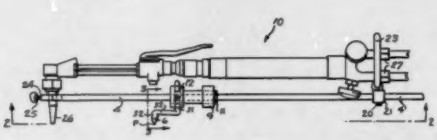
1. In the introduction of a stream of oxidizing gas into a bath of molten metal through a tuyere submerged in said bath, wherein the discharge end of said tuyere is cooled by injecting a liquid cooling agent through a fluid passageway disposed peripherally of said tuyere, an improved process for minimizing the amount of liquid cooling agent supplied to said fluid passageway with an accompanying decrease in the wear rate of said discharge end of said tuyere during the introduction of said oxidizing gas into said molten metal, said improvement comprising:
providing, at the discharge end of said tuyere, an outlet for said fluid passageway having a cross-sectional area not exceeding 2 square millimeters per centimeter of circumference of said fluid passageway; and
injecting said cooling agent into said fluid passageway at a pressure to achieve a flow rate therethrough of 0.05 to 0.14 liters per minute per centimeter of said circumference.

4,157,814

CUTTING ATTACHMENT FOR WELDING TORCHES

Louis E. Miller, 409 E. 13th, Odessa, Tex. 79761

Filed Oct. 12, 1977, Ser. No. 841,589
Int. Cl.[2] B23K *7/10*
U.S. Cl. 266—70 5 Claims



1. A cutting attachment for a welding torch to cause the torch to oscillate in a circular path comprising in combination:

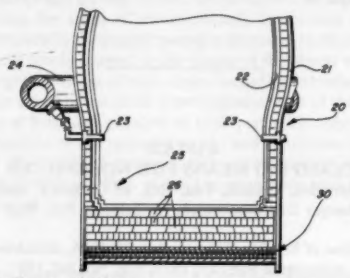
a bar, means at remote extremities of said bar to hold and constrain a cutting torch, a sleeve overlying said bar having a threaded hole extending therethrough and threads on one end of an outer periphery of said sleeve, a collar overlying said sleeve having an elongate axially extending slot overlying the threaded hole of said sleeve and a flanged rim circumferentially upstanding at an extremity of said collar proximate to the threaded end of said sleeve; an inner threaded nut engaging the threads of said sleeve, said nut having a portion which overlies said flanged rim of said collar, a shaft threadedly fastened within said threaded hole of said sleeve locked to said bar, a block supporting a pivot point fastened on said collar and releaseable locking means connecting said block and collar to said sleeve whereby when said releaseable means is loosened said nut serves as a vernier adjustment translating said collar it's supported block and therefore said pivot point axially, and when said releaseable means is tightened, said nut is inoperable.

4,157,815

FURNACE BOTTOM CONSTRUCTION WITH SEAL

Frederic E. Saviski, Homewood, Ill.; William E. Slagley, Crown Point, and Peter K. Strangway, Munster, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Apr. 28, 1978, Ser. No. 901,079
Int. Cl.[2] C21B 7/10
U.S. Cl. 266—193 **12 Claims**



1. In a furnace bottom:
a bottom hearth layer of refractory material;
a layer of ramming material located below said bottom hearth layer and having a top surface;
cooling means in said layer of ramming material;
seal means, impervious to liquid and gas and located on the top surface of said layer of ramming material, for preventing the escape downwardly below said seal means of gas from the interior of the furnace and to prevent the escape upwardly into said furnace interior of fluid from below said seal means;
said seal means comprising a thin layer of material which follows the contours and indentations of said top surface of the ramming material to substantially eliminate air gaps between said top surface of the ramming material and the bottom surface of said fluid-impervious material;
said bottom surface of said seal means being in intimate contact with said top surface of the ramming material along substantially the entire area of said top surface.

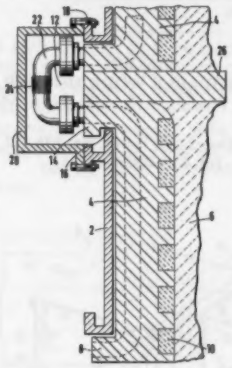
4,157,816

SHAFT FURNACE COOLING

Edouard Legille, Luxembourg, Luxembourg, assignor to S.A. des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg

Filed Dec. 5, 1977, Ser. No. 857,752
Claims priority, application Luxembourg, Dec. 8, 1976, 76349
Int. Cl.[2] C21B 7/10
U.S. Cl. 266—194 **8 Claims**

1. In a shaft furnace, the furnace wall being defined by an external metal jacket and initially a refractory lining, an improved cooling system for the furnace wall comprising:
a plurality of cooling elements positioned adjacent the inner surface of the jacket and having the shape of flat vertically oriented panels forming a lining on the inner surface of the jacket, said panels having top and bottom ends, said cooling elements including means by which a coolant may be circulated therethrough;
a plurality of openings in the furnace jacket, said openings being dimensioned to permit passage of said cooling elements therethrough;
spacer means positioned between and in contact with the top



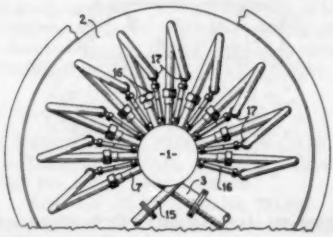
and bottom ends respectively of adjacent cooling elements to space said cooling elements in the vertical direction, said spacer means being located in registration with said jacket openings whereby said spacer means may be removed through said openings to provide a clearance between vertically adjacent cooling elements to permit removal of said cooling elements through said jacket openings; and
means for removably supporting said cooling elements on said jacket.

4,157,817

CONVERTER

Alain G. Moyaux; Gilbert J. Amann, both of Trith St Leger; Amédée Lebrun, Maing; Michel Poupon, Trith St Leger, and Gerard Gorgeret, Mont St Martin, all of France, assignors to Union Siderurgique du Nord et de l'est de la France, Paris, France

Filed Oct. 18, 1977, Ser. No. 843,256
Claims priority, application France, Oct. 19, 1976, 76 31412; Sep. 14, 1977, 77 27781
Int. Cl.[2] C21C 5/48
U.S. Cl. 266—222 **12 Claims**



1. A device for injecting fluid and powdered products in a converter, comprising in combination tuyeres having a first inside diameter and located adjacent a bottom of the converter, a cylindrical manifold for the fluids and powdered products disposed in a centre part of and under the bottom of the converter, connecting pipes having a second inside diameter larger

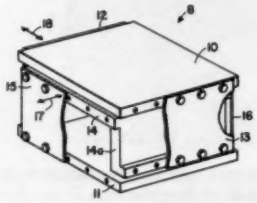
than said first inside diameter and extending radially outwardly from the manifold, the connecting pipes having the shape of a lyre with a substantially complete loop, a connector defining a frustoconical bore having at one end said first diameter and at an opposite end said second diameter interconnecting each tuyere to a corresponding one of said connecting pipes, the frustoconical bore having such taper as to detach the stream of fluid and powdered products from the inner surface of the tuyere adjacent the connector and thereby reduce wear of said inner surface and permit the avoidance of inner protecting tubes for the tuyere.

4,157,818

X-Y MOVABLE WORK HOLDER

Robert T. Key, Jr., Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 1, 1977, Ser. No. 856,472
Int. Cl.[2] G01B *11/26*
U.S. Cl. 269—73 **5 Claims**



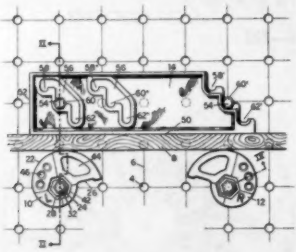
1. A work holder stage that includes a work mounting plate movable in X and Y directions, a stationary base plate, first and second pairs of perpendicularly oriented leaf springs, the first pair of leaf springs connected between the base plate and an intermediate coupling plate to permit motion in one of said X and Y directions while the second pair of leaf springs are connected between the work mounting plate and the intermediate coupling plate to permit motion in the other of said X and Y directions.

4,157,819

ADJUSTABLE WORK PIECE CLAMPING SYSTEM

Richard W. Meyer, 6169 Coloma Dr., Goleta, Calif. 93017

Filed Jan. 27, 1977, Ser. No. 762,868
Int. Cl.[2] B25B *1/08*
U.S. Cl. 269—231 **4 Claims**



1. An adjustable clamping system for holding a work piece in a fixed position relative to a work surface, the system including:

A work surface having a grid of openings, the grid defining two orthagonal directions, one in line with the row of openings, the other in line with the column of openings;

fence means having a bearing surface for opposing movement of a work piece on a work surface, the fence means including a flat surface against which a work piece may bear, and at least three laterally spaced pockets for receiving the shaft of a pin to removably attach the fence to the work surface, the outer pockets being positioned to attach the fence with its flat surface in line with a row or column of the openings, the center pocket being positioned to, with one of the outer pockets attach the fence with its flat surface generally at a 45 degree angle to the rows and columns of openings in the work surface;

pin means for removably attaching the fence to the work surface;

means for releasably clamping work piece against the bearing surface of the fence means comprising first and second clamping members;

said first clamping member including a spiral outer surface radiating outwardly in a clockwise direction;

pin means to pivotally attach the first clamping member to the work surface;

said second clamping member including a spiral outer surface radiating outwardly in a counterclockwise direction; and

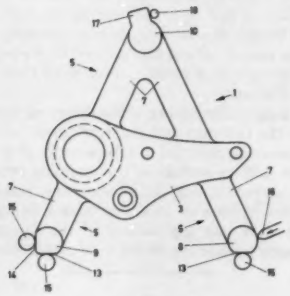
pin means to pivotally attach the second clamping member to the work surface, whereby the workpiece may be clamped to a work surface against the fence means by the first and second clamping members by rotating the clamping members in opposite directions to bear against the workpiece.

4,157,820

CLAMPING MEANS FOR WORKPIECES

Dieter Meuschel, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmachinen, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 727,144, Sep. 27, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,149
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543299
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 269—319 **5 Claims**



1. Clamping means for workpieces of different shape, comprising a clamping member firmly connected to at least one workpiece and being receivable and clampable in a clamping device, said clamping member forming an integral structure with the at least one workpiece and comprising a plurality of narrow web-like bridges being disposed along at least two legs of an imaginary triangle and three support cams disposed at extremities of said bridges outside the at least one workpiece, said three support cams being located at respective vertices of said imaginary triangle and being clampingly engageable in a three-point contact in the clamping device.

4,157,821
METHOD AND APPARATUS FOR MANIPULATING MARGINALLY PERFORATED NOTE BOOKS PRIOR TO INTRODUCTION OF SPIRALS

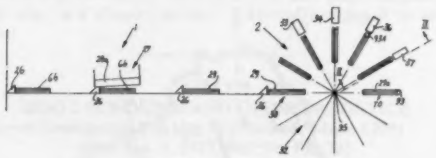
Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to WOMAKO-Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Nov. 25, 1977, Ser. No. 854,835

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653759; Jul. 27, 1977, 2733820

Int. Cl.² B42B *2/00*

U.S. Cl. 270—53 **9 Claims**



1. A method changing the configuration of a plurality of elongated holes each of which consists of registering perforations provided in one marginal portion of each sheet of a pile of sheets which are about to receive a spiral having a predetermined radius and serving to hold the sheets of the pile together, comprising the steps of simultaneously converting all holes into substantially V-shaped passages disposed in planes which are at least nearly normal to the planes of the sheets and to the one marginal portion of each sheet, including introducing into each hole a pair of mandrels from opposite sides of the pile and pivoting at least one mandrel of each pair with respect to the other mandrel of the respective pair; and simultaneously converting all V-shaped passages into arcuate passages having radii of curvature which at least approximate said predetermined radius.

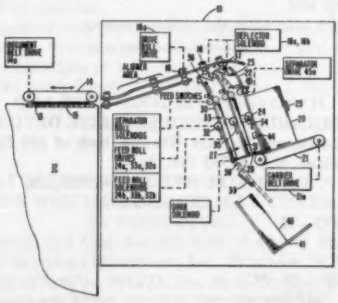
4,157,822
DOCUMENT FEEDER WITH RECIRCULATION AND UNLOADING

Myrl J. Miller, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,346

Int. Cl.² B65H *5/22*

U.S. Cl. 271—3.1 **19 Claims**



1. Apparatus for recirculating original sheets through a processing station comprising:

an input bin for receiving a plurality of stacks of original sheets with the sheets of each said stack being in its own predetermined sequence,

means for serially transporting the sheets from said input bin to the processing station,

at least one additional bin,

means for serially delivering sheets from the processing station for stacking in said additional bin,

means for serially extracting sheets in the said predetermined sequence of each said stack from the bottom of the stack in said additional bin for redelivery to the processing station, and

control means selectably operable for enabling said extracting means and said delivering means for duplicating the sequence of sheet delivery and handling at the processing station a preselected number of times.

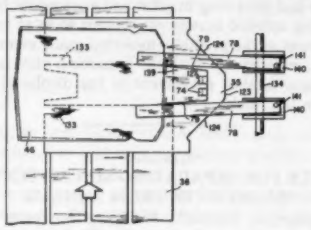
4,157,823
METHOD AND MEANS FOR TRANSPORTING AND ORIENTING LIMP PLYS OF FABRIC OR THE LIKE

Kenneth O. Morton, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Division of Ser. No. 471,029, May 17, 1974, Pat. No. 3,940,125. This application Oct. 30, 1975, Ser. No. 627,086

Int. Cl.² B65H *5/04, 9/06*

U.S. Cl. 271—10 **10 Claims**



1. An apparatus for separating and transporting limp plies one at a time from a ply stack, which comprises

(a) means to pick plies one at a time from a ply stack,

(b) a flat shutter plate for receiving plies one at a time from the picking means,

(c) means for actuating said shutter plate between ply receiving and ply delivering positions, and

(d) means for orienting said plies on said plate comprising a pair of sweep elements engageable with one end edge of a ply supported by said plate, near the center of said edge, and movable symmetrically away from said center while maintaining engagement between said edge and at least one of said sweep elements.

6. The method of orienting a limp ply after transportation thereof, on a flat plate to a destination, which comprises

(a) while the ply remains on the plate, interposing a pair of spaced edge engaging elements adjacent one end edge of the ply and spaced well inward from its side edges,

(b) thereafter moving said plate in a direction to move said end edges toward said edge engaging elements, and

(c) during engagement of said end edge with at least one of said elements and while continuing to move said plate in said direction, moving said edge engaging elements symmetrically outward from the center of the ply.

4,157,824
FABRIC WORK PIECE SEPARATOR

Kenneth J. Littlewood, Carlton, Australia, assignor to K. J. Littlewood Pty. Ltd., Carlton, Australia

Filed Apr. 27, 1977, Ser. No. 791,555

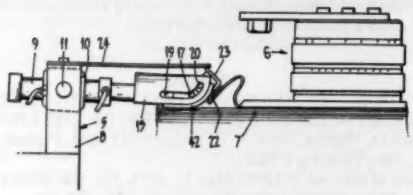
Claims priority, application Australia, Apr. 28, 1976, 5730/76; Apr. 26, 1977, 24576/77

Int. Cl.² B65H *3/22*

U.S. Cl. 271—10 **4 Claims**

1. An apparatus for separating plies of fabric from a stack, comprising a mounting bracket, fluid cylinder actuating means connected to a source of fluid pressure and pivotally mounted in the mounting bracket and including a piston and actuating

rod extending therefrom, friction pad means mounted on the end of the actuating rod for engaging the top ply of the stack, said pad means being located in a guide member mounted on and extending from said fluid cylinder means for movement from the ply engaging position with an impacting force outwardly and upwardly relative to the fluid cylinder actuating means on a pulse energization of said actuating means so as to



separate and displace the top ply in a sweeping and lifting action from and across the stack, and fixed abutment means attached to said mounting bracket and engageable by said pad means during upward movement thereof so as to cause resultant movement of the pivotally mounted guide member downwardly into engagement with the remaining plies in the stack and hold same against movement as the displaced ply is removed from the stack.

4,157,825

DEVICE FOR SEPARATING SINGLE TEXTILE WORKPIECES FROM A STACK

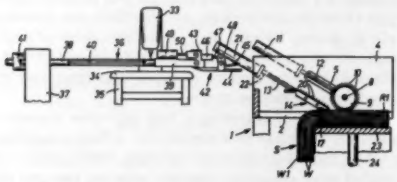
Bernd Ellenberger, Gonbach; Wolfgang Seelinger, and Gerd Wa ·r, both of Kaiserslautern, all of Fed. Rep. of Germany, assig ors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Gern any

Filed Dec. 7, 1977, Ser. No. 858,166

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657230

Int. Cl.[2] B65H *3/06, 3/56, 5/04*

U.S. Cl. 271—10 **11 Claims**



1. A device for sparating a topmost workpiece form a stack of textile workpieces, comprising a holding member having a lower end engageable on the top of the stack to hold the workpieces in position, said holding member having end elongated surface, workpiece engagement means distributed along said surface, a strip-off element engageable with the top of said stack adjacent said holding member, movement means connected to said strip-off element to move said strip-off element into engagement with the top of said stack to direct at least the topmost workpiece onto the holding member and into engagement with said engagement means by movement in a first direction to progressively direct the width of the workpiece from the location of its engagement by said lower end of the holding member up to its opposite edge by directing this length of workpiece over the length of said surface, said workpiece engagement means preventing disengagement of the topmost workpiece picked up in a direction which would permit the falling of this workpiece back into the stack, means for moving said strip-off element in a second direction opposite to the first direction over said surface and said workpieces to disengage any additional workpieces which have been picked up with said uppermost workpiece from said surface, and means for moving said holding member upwardly to lift the uppermost workpiece off of the stack.

4,157,826

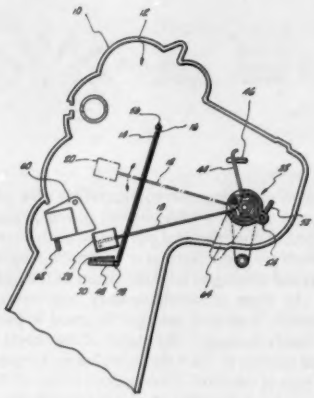
TOY ASSEMBLY WITH SOUND DEVICE

Anson Sims, Northridge, and Lawrence T. Jones, Playa Del Rey, both of Calif., assignors to California R & D Center, Culver City, Calif.

Filed Jun. 6, 1977, Ser. No. 803,667

Int. Cl.[2] A63G *17/00*

U.S. Cl. 272—53.2 **10 Claims**



1. A hobby horse toy assembly having audio capability to produce sounds simulating a horse comprising;

a body housing simulating the configuration of a horse;

a resilient metallic striker member pivotally mounted within the body housing;

a weighted member attached to one end of the striker member;

a coil spring mounted within the body member between the weighted member and the pivotal mounting so as to be biased into contact with the resilient striker member;

means for restraining the striker member until sufficient stress is generated to effectuate a sudden release sliding movement between the striker member and the coil spring, and

means for activating the striker member.

4,157,827

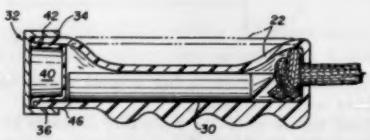
HAND GRIP FOR JUMP ROPE AND SIMILARLY-GRIPPED EXERCISE DEVICES

Edith Winston, and Herbert Winston, both of 135 Hazelwood Dr., Jericho, N.Y. 11753

Filed Jun. 10, 1977, Ser. No. 805,516

Int. Cl.[2] A63B *5/20*

U.S. Cl. 272—75 **2 Claims**



1. As an improvement for a jump rope, a hand grip attached to said jump rope comprising a hand-sized hollow cylindrical pliable body member of the type that is squeezable by external-

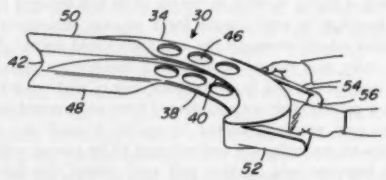
ly-applied pressure to a diminished diameter defining a storage compartment for exercise weights, a circular edge at one end of said body member bounding an access opening into said storage compartment for the placement and removal of said exercise weights, a plug of rigid construction material having an inserted operative position with said access opening in supported relation beneath said circular edge so as to maintain said shape thereof, and an outer closure member sized to provide a friction fit when placed in covering relation over said supported circular edge, whereby when less than all said exercise weights are in use in said compartment allowing a collapse therein said closure member nevertheless maintains said position closing said access opening due to said plug maintaining said edge and closure member frictionally engaged to each other.

4,157,828

DISC LAUNCHING AND CATCHING DEVICE

Stavros Cosmopulos, 8 Bridge St., Norwell, Mass. 02061

Filed Sep. 1, 1977, Ser. No. 829,733
Int. Cl.[2] A63B 65/12
U.S. Cl. 273—96 R **10 Claims**



1. A game device for launching and retrieving a disc spun back and forth between players, comprising in combination,
(a) a concave circular disc, and,
(b) an elongated and substantially rigid body formed with a head at one end and a handle at the opposite end thereof,
(c) said head including a pair of spaced and substantially parallel, relatively wide side walls and a relatively narrow transverse rear wall connected between said side walls and recessed from the open end thereof to form a slot adapted to receive said disc inserted edgewise therein,
(d) the distance between said side walls being slightly greater than the depth of said disc,
(e) said rear wall defining a track for the peripheral edge of said disc and at least the outer portion of said rear wall being curved towards the outer end of said head and the mouth of said slot,
(f) the depth of said slot over the major portion of said head generally corresponding with the radius of said disc,
(g) the outer edges of said side walls along the entrance to said slot being flared outwardly to guide a disc into said slot.

4,157,829

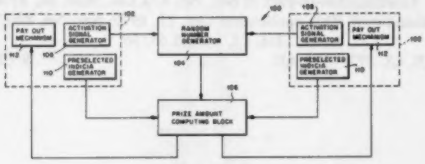
INSTANT LOTTERY GAME EMPLOYING VENDING MACHINES WHICH ARE CENTRALLY CONTROLLED BY COMPUTERS

Max Goldman, and Carl Alexoff, both of Cherry Hill, N.J., assignors to System Operations, Inc., Princeton, N.J.

Continuation of Ser. No. 544,923, Jan. 28, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 734,964
Int. Cl.[2] A63F 9/00
U.S. Cl. 273—138 A **14 Claims**

1. Apparatus for conducting an instant lottery game, comprising:
(A) first means for generating a sequence of random indicia responsive to an activation signal;
(B) a plurality of remote vending machines, each said vending machine including:
(1) second means for generating an activation signal upon receipt of a wager of a proper amount, said activation signal being applied to said first means so as to initiate generation of said random indicia;
(2) third means for generating a pre-selected indicia;
(C) fourth means for determining the number of matches between said pre-selected indicia and said random indicia and for computing a prize amount based upon said number of matches and the wager amount; and
(D) each said remote vending machine also including fifth means for immediately paying the prize amount if it is less than a pre-determined value and for issuing a validation ticket entitling the player to collect the prize amount at a validation center if the prize amount is greater than said pre-determined value.

8. A method for conducting an instant lottery game, comprising the steps of:
providing a plurality of remote vending machines;



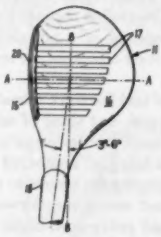
generating an activation signal at said remote vending machine whenever said remote vending machine receives a wager of a proper amount;
generating a sequence of random indicia responsive to the generation of said activation signal;
generating at each of said vending machines a pre-selected indicia associated with that vending machine;
determining the number of matches between said pre-selected indicia and said random indicia;
computing a prize amount based upon said number of matches and said wager amount;
paying the prize amount if it is less than a pre-determined value and issuing a validation ticket entitling the player to collect the prize amount at a validation center if the prize amount is greater than said pre-determined value.

4,157,830

WOOD TYPE GOLF CLUB

David L. Taylor, deceased, late of Carmel Valley, Calif., and by Dale W. W. Taylor, executor, 380 W. Carmel Valley Rd., Carmel Valley, Calif. 93924

Filed Jan. 10, 1977, Ser. No. 778,712
Int. Cl.[2] A63B 53/04
U.S. Cl. 273—167 G **3 Claims**



3. A distance wood type golf club having a head, and a shaft, said head having shaft receiving means for positioning said shaft at an angle of from 3° to 6° forward of the vertical plane at right angles to the intended line of flight at the time of impact with a golf ball, making the axis of the shaft an extension of the lead arm, left arm of a right-handed player, in the address position, and wherein the said stripes are uniform,

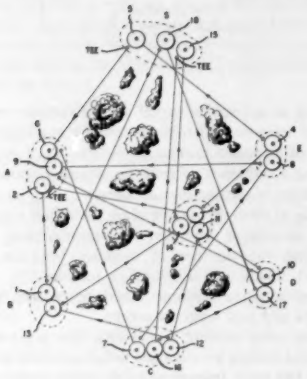
alternately of contrasting colors, are parallel to the intended line of flight and extend from the face over a substantial area of the top surface of said head and for a short but readily visible distance from the top downwardly on the striking face.

4,157,831

COMPACT GOLF COURSE

Charlie W. Renn, 6040 Old Valley School Rd., Kernersville, N.C. 27284

Continuation-in-part of Ser. No. 672,120, Mar. 31, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,726
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 AB 8 Claims



1. A golf course which comprises

(a) a plurality of perimeter areas spaced from each other and so located that straight lines joining them form the outline of a polygon, a plurality of fairways extending away from each of said areas, each area being comprised of a plurality of green regions closely clustered together, each green region including means bearing a number for indicating a predetermined numbered golf course hole and an adjacent tee region for playing to the next numbered green region, the space between each said adjacent tee region and the next numbered green region comprising a fairway, and

(b) a further area located at the interior of the polygon, said area being comprised of a plurality of numbered green regions and at least one adjacent tee region closely clustered together,

(c) at least some of said fairways extending along the perimeter of said polygon, and some of said fairways extending across other ones of said fairways, and some of said green and tee regions being so numbered and located as to require a golfer playing the course to travel along the crossing fairways and along the fairways extending on the perimeter of said polygon in order to play some of said holes along the perimeter of said polygon,

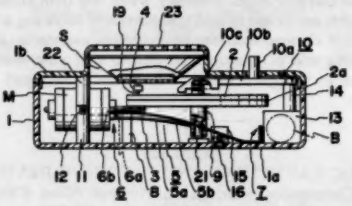
(d) a fairway extending between each said green and tee region of said further area and the green and tee regions of at least one of the areas located at the perimeter and some of said green and tee regions being so numbered and located as to require a golfer playing the course to travel a fairway to said further area in order to play a hole located in said further area.

4,157,832

SIMPLIFIED STRUCTURE OF TOY PHONOGRAPH

Katsumi Watanabe, Kawasaki, Japan, assignor to Yugen Kaisha Watanabe Kenkyusho, Kawasaki, Japan

Filed Oct. 28, 1977, Ser. No. 846,520
Claims priority, application Japan, Jul. 18, 1977, 52-85897
Int. Cl.[2] G11B *3/00*
U.S. Cl. 274—1 A 6 Claims



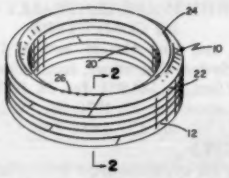
1. A toy phonograph having a record disc rotatably and axially movably pivoted on a center pin carried by a chassis of a casing, a motor having an output shaft and secured by trunnion bearings to said chassis for a pivotal movement in the direction which intersects the axis line of said output shaft, so as to bring said output shaft, into a rim-driving engagement with said record disc from the back side of said record disc, a speaker provided above and spaced from said record disc, and a tone arm normally biased by spring toward the starting position of reproduction and adapted to be swung within the space between said speaker and said record disc keeping a sliding contact with said speaker, characterized in that spring means for biasing said motor to bring said output shaft into contact with said record disc, which are made of electroconductive material and are retained at their one end by terminals of said motor, and at their other ends connected to power source terminals, so that spring means plays the role of source lead wires.

4,157,833

SEALING RING WITH DIAMETER INDICIA

Peter F. Kozlowski, Billerica, Mass., assignor to A. W. Chesterton Company, Stoneham, Mass.

Filed Dec. 1, 1977, Ser. No. 856,524
Int. Cl.[2] F16J *15/00*
U.S. Cl. 277—9 9 Claims



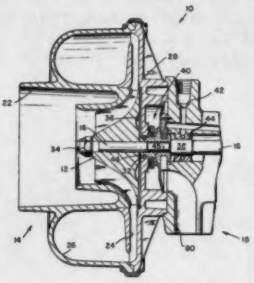
1. A sealing ring of elastomeric material characterized in that a plurality of ring diameter indicia are integrally formed in and equidistantly spaced along an arc segment of the surface of a wall of said ring, the distance between indicia corresponding to a predetermined portion of the ring diameter.

4,157,834

SEAL SYSTEM

Fredrick E. Burdette, Torrance, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 20, 1978, Ser. No. 888,583
Int. Cl.[2] F16J *15/42*
U.S. Cl. 277—13 27 Claims



1. A seal system for sealing passage of a rotatable shaft through an opening in a wall separating regions subject to differential pressures comprising an axially extending annular flange projecting from said wall in circumferentially spaced relation with said shaft; first means mounted for rotation with said shaft adjacent the wall opening and including an annular enlargement extending axially toward said wall concentrically about said flange for moving fluid radially away from said flange and the wall opening, said enlargement being in running engagement with said wall radially outwardly from said flange; and second means on said wall radially outwardly from said enlargement and extending over at least the top of the wall opening for collecting fluid draining down said wall and for guiding the collected fluid away from above the wall opening, whereby draining fluid uncollected by said second means is redirected radially outwardly away from the wall opening by said enlargement.

4,157,835

STRIP SEAL FOR STUFFING BOX PACKING

Otto Kahle, Leegmoor 42, 2000 Hamburg 62, and Günter Reichow, Eichhof 3, 2105 Seevetal 6, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 674,287, Apr. 6, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,495
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1975, 7510916
Int. Cl.[2] F16J *15/24*
U.S. Cl. 277—102 8 Claims

1. A graphite containing strip seal for stuffing box packing designed to be sealingly coiled in layers about a rotatable shaft, said graphite having a maximum modulus of elasticity of 2000 N/mm^2, comprising:

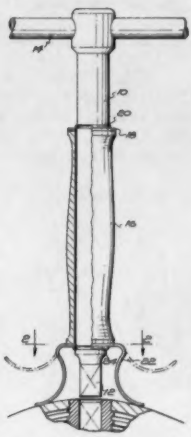
an upper and a lower surface with at least one of said surfaces having a plurality of raised areas and indentations such that when the strip is coiled the raised areas of one surface do not rest in the indentations of an abutting surface.

4,157,836

KEYS FOR MANUALLY OPERATED WORK-HOLDING CHUCKS

George C. Derbyshire, Sheffield, England, assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Mar. 7, 1978, Ser. No. 884,365
Claims priority, application United Kingdom, Mar. 8, 1977, 9777/77
Int. Cl.[2] B25B *13/44*
U.S. Cl. 279—1 K 2 Claims



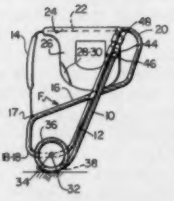
1. A self-ejecting key for use on a work holding chuck said key comprising a spindle having a square portion at one end for engagement with an adjusting screw of the chuck the other end being formed to receive a cross bar for manual rotation of the spindle, a spring steel plate member mounted upon the spindle adjacent the square portion, said plate member having splayed finger elements which are resiliently flexed by contact with the chuck when the key is in operative engagement with an adjusting screw of the chuck, and a loosely fitted sleeve arranged upon the spindle between the square portion and the other end of the spindle.

4,157,837

BACK AND STROLL CARRIER

David T. Kao, 2415 Heather Way, Lexington, Ky. 40503

Filed Dec. 6, 1977, Ser. No. 858,081
Int. Cl.[2] B62B *7/12*; A47D *13/02*
U.S. Cl. 280—30 5 Claims



1. A child supporting and carrying device comprising:

a pair of rigid frame structures each being facsimile fabrications of each other, said respective frame structures each

approximating a figure eight configuration having lower loop portions and upper loop portions;

means for spacing said pair of rigid frame structures with said figure eight configurations substantially in parallel;

means for supporting a seat for said child between said upper loops of said frame structures;

wheel means connected to said lower loops of said frame structures; and

handle means pivotally connected to said frame structures and adjustable to at least three positions including a storage position wherein said handle means is folded against said frame means, a support position at a selected angle to said frame for supporting said device as a chair, and a fully extended position away from said frame for use as bed or a stroller, with said upper loop portions resting on a horizontal support surface when said device functions as a bed.

4,157,838

COUPLING HOOK FOR FARM TRACTORS

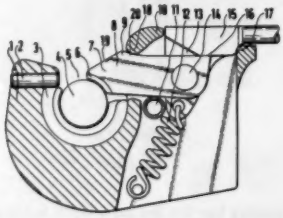
Wilhelm von Allwörden, Erbach, Fed. Rep. of Germany

Filed Oct. 4, 1977, Ser. No. 839,308

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645479

Int. Cl.[2] B60D *1/10*

U.S. Cl. 280—508 **3 Claims**



1. Coupling hook for use on the lower guides of a three-point linkage on a farm tractor or the like including a locking mechanism for locking a coupling bolt connected to a piece of farm equipment to be connected to the farm tractor, said coupling hook including a jaw having a concave surface for receiving and seating the coupling bolt, said coupling hook having an opening therein extending laterally from said jaw and open at one end into said jaw, and a locking mechanism for holding the coupling bolt in said jaw, said locking mechanism including an elongated locking bolt, said locking bolt having a first end and a second end with a nose-like projection on the first end of said locking bolt, said nose-like projection having a concave surface thereon, said locking bolt being movably displaceable through said opening for placing the concave surface on the nose-like projection into engagement with the surface of the coupling bolt within said jaw, wherein the improvement comprises a drag-lever articulatedly connected to said locking bolt at a position spaced from said first end thereof, said coupling hook including a rear wall spaced from said jaw and a fulcrum located between said rear wall and said jaw, said fulcrum having a first surface thereon located in the path of said locking bolt extending through the opening in said coupling hook and a second surface spaced from said first surface and located more remotely from said jaw than said first surface, a tension spring attached at one end to said drag-lever and at its other end to said coupling hook, said drag-lever having a first end located closer to said jaw and a second end spaced outwardly away from said jaw from said first end with said first end being in contact with said second surface on said fulcrum, a pin attached to said coupling hook adjacent the opening through said coupling hook and said pin being located on the opposite side of said locking bolt from said fulcrum, said locking bolt being pivotally supported on said pin, said locking bolt being movably displaceable between a locking position holding the coupling bolt in said jaw and a released position allowing removal of the coupling bolt from the jaw, said drag lever having a shoulder thereon spaced from the first end thereof, said drag lever secures said locking bolt in the locking position and in such position said drag-lever being form-fittingly secured between said fulcrum and said rear wall of said coupling hook with said shoulder on said drag-lever bearing against said rear wall, said first end of said locking bolt having a chamfered surface extending from said concave surface toward the second end thereof, and said chamfered surface in the locking position facing outwardly away from said jaw.

4,157,839

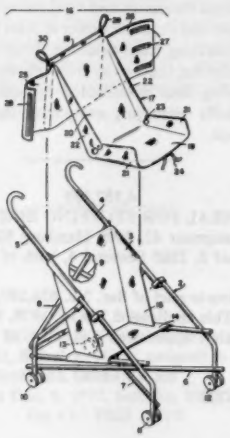
BABY CARRIAGE ACCESSORY

Jayne L. Lahti, 33 Rockledge Rd., Montville, N.J. 07045, and Barbara A. Hoff, R.D. No.4, Box. 337, Sussex, N.J. 07461

Filed Mar. 17, 1978, Ser. No. 887,649

Int. Cl.[2] B62B *11/00*; A47C *7/02*

U.S. Cl. 280—642 **3 Claims**



1. A baby carriage accessory for a foldable carriage having a seat disposed on a collapsible tubular frame, said accessory having (1) first and second portions, (a) said first portion having bottom and back cushions operable to (i) conform to the bottom and back, respectively, of the carriage seat when the carriage is unfolded but (ii) permit unhindered folding of said carriage, and (b) said second portion comprising a baglike receptacle joined on one side of its open end to the top of the back cushion of said first portion and having, disposed on the same side as it is joined to said back cushion, means operable to (i) connect said receptacle to the rear of said carriage frame when unfolded and (ii) to encircle both said frame when folded and said first portion, and (2) loop means operable to engage opposing side portions of said carriage frame, said loop means being disposed approximately at the junction of said first and second portions.

4,157,840

MOTOR VEHICLE WHEEL SUSPENSION ARRANGEMENT

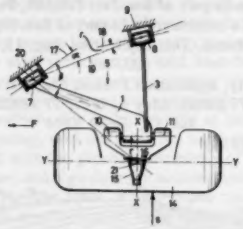
Wilhelm Kroniger, Münchingen-Kallenberg, and Wolfgang Eyb, Leonberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 27, 1976, Ser. No. 726,558

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543189

Int. Cl.[2] B60G *1/00*; B62D *7/06*

U.S. Cl. 280—688 33 Claims



1. A wheel suspension arrangement for vehicles which include a vehicle body and a wheel carrier means, the improvement comprising: a wheel guide means including a transverse strut means constructed so that at least a portion thereof is displaceable in a vehicle lontitudinal direction, a longitudinal strut means constructed so as to be form-rigid associated with the transverse strut means, a first bearing means having a variable elasticity for pivotally mounting the longitudinal strut means at the vehicle body, and further bearing means having differing elasticities for mounting the wheel guide means at the wheel carrier means.

4,157,841

SAFETY BELT CONNECTOR COVER

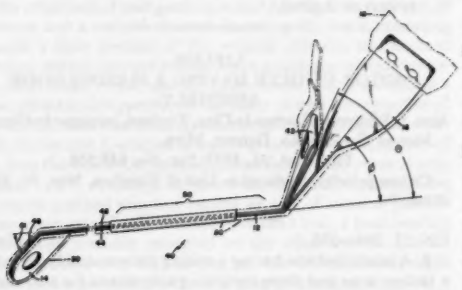
Kenneth A. Bergman, Utica, Mich., and Robert J. Bishop, Pendleton, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 654,481, Feb. 2, 1976, Pat. No. 4,070,038. This application Aug. 15, 1977, Ser. No. 824,589

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.[2] B60R *21/10*

U.S. Cl. 297—482 21 Claims



1. Safety belt connector, comprising:

a. elongated means composed of a metal plate;

b. said elongated means having a first terminus adapted to be secured to the vehicle, a second terminus adapted to fixedly support a first fastening means for receiving the tongue of a seat belt and a third terminus adapted for fixed engagement with one end of a seat belt web and said other end of said web being connected to a member of a seat belt assembly; and

c. cover means composed of plastic material formed around a major portion of the exterior surface of said elongated means.

4,157,842

METHOD OF MAKING A PHOTOGRAPH ALBUM

Arthur W. Silver, 1200-37 Warburton Ave., Yonkers, N.Y. 10701

Filed Aug. 29, 1977, Ser. No. 828,819

Int. Cl.[2] B42D *1/00*

U.S. Cl. 281—38 1 Claim

1. A method of forming a photograph album from a booklet, said booklet comprising a front cover, a back cover, a plurality of leafs disposed between said front and back covers and means for joining said covers and leafs, each of said plurality of leafs having a rectangular configuration defined by a pair of generally parallel, opposed short edges, a pair of generally parallel long edges and comprising a single tab portion and a single card portion, said tab portion and card portion having a common dimension defined by said short edges, said tab portion being smaller in surface area than said card portion, said tab portion and card portion being separably connected by a weakened tear line, said weakened tear line being parallel to said short edges, said tab portion having a strip of adhesive material adjacent said tear line and extending between said long edges, said method including the steps of

(a) removing said card portion from said tab portion along said weakened tear line and

(b) attaching a photograph to said tab portion along said adhesive strip, said adhesive strip being the sole means joining said photograph to said tab portion,

(c) said card portion and said photograph being of substantially the same size,

(d) said photograph having indicia on at least one surface different from any indicia on said card portion.

4,157,843

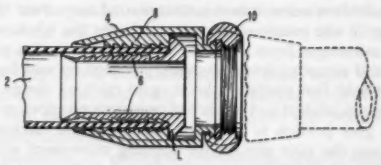
HOSE COUPLING

Otto A. Trnka, deceased, late of Saugerties, N.Y.; by Bertha E. Trnka, administrator, and Gilbert Trnka, administrator, both of 3270 Wrolsen Dr., Saugerties, N.Y. 12477

Filed Oct. 25, 1977, Ser. No. 845,385

Int. Cl.[2] F16L *33/16*

U.S. Cl. 285—113 3 Claims



1. A coupler for extremely long flexible hoses that are subjected to very high end pulls comprising

a hollow main body section, the interior wall of which tapers

from a maximum diameter at one end to a minimum diameter at its other end,

a tubular hose-entering chamber at the minimum diameter end of said body section,

said chamber including a sleeve member and a concentrically disposed wedge member, each member being movable axially within said tapered hollow main body section and adapted to embrace a hose jacket that enters said chamber, and is gripped between said members one of said members being doubly tapered with the apex edge of said double taper being in direct contact with said hose jacket when said jacket is gripped by said members, both the angles of said double taper being no greater than approximately 4 degrees, said wedge member having a tapered external surface adapted to engage the tapered interior wall of the main body section,

a larger gripping area of said tapered member being in contact with said hose jacket when said members are moved axially within the tapered hollow main body section, whereby the gripping action takes place at the ridge of the taper at low water pressures and low end pulls but is automatically distributed over a larger area at high water pressures and at high end pulls.

4,157,844

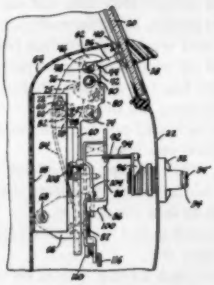
TAILGATE LOCK AND CONTROL ASSEMBLY

Edmund F. Sarosy, Birmingham, and Stanley Kwasiborski, Jr., Hazel Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1977, Ser. No. 855,401

Int. Cl.[2] E05C 3/26

U.S. Cl. 292—48 **3 Claims**



1. A lock and control assembly for a vehicle tailgate, having a window portion hinged along an upper edge and a gate portion hinged along a lower edge, with the two portions meeting one another at opposite adjacent edges when the tailgate is in a closed operative position, comprising: a frame mounted on the gate portion; releasable means including a bolt and a striker on the frame and window portion respectively for holding the window portion in a closed position in relation to the gate portion; a first actuating lever pivotally mounted on said frame; connector means attaching said first lever to said releasable window means so that pivotal movement of the first lever in one rotational direction releases the window portion for movement from its closed to its open operative position, a second actuating lever pivotally mounted on said frame adjacent said first operating lever, gate latching means movable between latched and unlatched operative positions to maintain the gate portion in a closed position when latched and to release the gate portion for opening movement when in an unlatched position; connecting means between said second lever and said gate latching means so that pivotal movement of the second lever in another rotational direction opposite to said one rotational direction actuates said gate latching means; a remote external actuator on the tailgate portion and in overlying relation to the control assembly for rotating the first and second levers respectively by opposite rotation thereof; blockout means between said first and second levers preventing rotation of the second lever prior to rotation of the first lever thereby requiring the release of said window portion for movement toward the open position before release of said gate portion.

4,157,845

RETRACTABLE ROOF SYSTEM FOR MOTORCARS

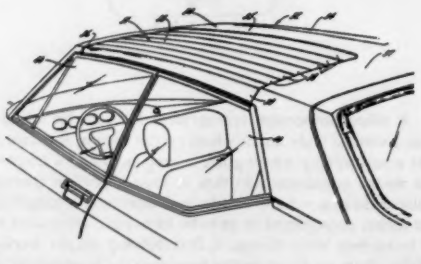
Gerard Quéveau, Cerisay, France, assignor to S.A. Louis Heuliez, Cerizay, France

Continuation-in-part of Ser. No. 769,559, Feb. 17, 1977, abandoned, and a continuation-in-part of Ser. No. 801,354, May 27, 1977, abandoned. This application Aug. 11, 1977, Ser. No. 823,700

Claims priority, application France, May 31, 1976, 76 16427; Feb. 11, 1977, 77 04009; May 6, 1977, 77 13925

Int. Cl.[2] B60J 7/04

U.S. Cl. 296—137 D **40 Claims**



1. A retractable roof system for motor cars, said system comprising:

a plurality of nesting shutters;

means for guiding said shutters for movement between a nested position and an extended position in which each shutter overlaps an adjacent shutter and the outer surfaces of said shutters altogether define an essentially continuous, stepped, extended outer surface;

said guiding means including a pair of fixed, substantially linear guide members adjacent, respectively, the lateral margins of said extended surface; and

follower means attached to said shutters and positively guided through a substantially linear path by said guide members, said follower means also locating said shutters in their extended position so that said extended surface generally matches a flat or curved profile for said roof system as desired.

4,157,846

MOTOR VEHICLE HAVING A SLIDING DOOR ASSEMBLY

Alan J. Whitcroft, Barton-le-Clay, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1977, Ser. No. 845,568

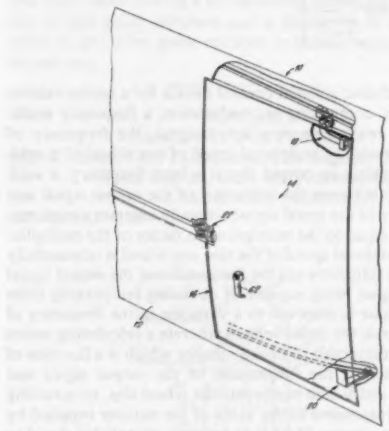
Claims priority, application United Kingdom, Nov. 26, 1976, 49406/76

Int. Cl.[2] B60J 5/06

U.S. Cl. 296—155 **4 Claims**

4. A motor vehicle having a sliding door assembly including a sliding door and three separate guide means for said sliding door, said sliding door being movable on said three guide means between a first position wherein said sliding door is held suspended parallel to and adjacent a side of said vehicle and a second position wherein said sliding door fills an opening defined in said vehicle side and lies flush with said vehicle side; the first of said guide means being situated at the upper leading edge of the sliding door, the second of said guide means being situated at the lower leading edge of the sliding door, and the third of said guide means being situated at a point on the trail-

ing edge of the sliding door intermediate the upper and lower edges thereof; said first guide means comprising: a support bracket secured to the sliding door adjacent the upper leading edge thereof; a cranked support arm pivotally mounted at one end to said support bracket and movable relative to said sliding door about a vertical extending through said support bracket; a guide roller rotatably mounted on the other end of said support arm and having an axis of rotation parallel to said vertical axis; a movable secondary support arm pivotally connected at one end thereof to said other end of said support arm so as to pivot about an axis parallel to said vertical axis; a load-bearing support roller rotatably mounted on the other end of said secondary support arm and having an axis of rotation at right angles to said vertical axis, said load-bearing support roller having a grooved periphery; a support track secured axis extending the vehicle adjacent the upper edge of said defined opening in the vehicle side and extending at least the width of said defined opening, said track having an upstanding portion thereof engaged with the grooved periphery of said load-bearing support roller; and a guide track secured inside said vehicle and above said support track, which guide track extends at a converging angle to said support track for at least the width of said defined opening and containing said rotatable guide roller movably retained therein; said second guide means comprising: a guide arm secured at one end to he lower leading edge of the



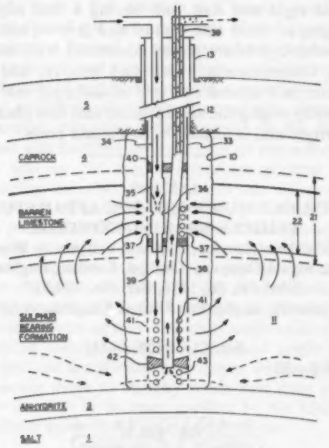
sliding door, said guide arm extending inwardly of the vehicle from said lower leading edge; a guide roller rotatably mounted on the other end of said guide arm and having a vertical axis of rotation; and a curved channel-shaped guide track extending beneath a floor portion of the vehicle adjacent said defined opening, which channel-shaped track guidingly retains therein the guide roller of the second guide means and is curved in a plane substantially parallel to the plane of said floor portion of the vehicle; and said third guide means comprising a substantially horizontal U-shaped cranked arm pivoted at one end of one limb thereof to the door about a substantially vertical axis; a guide roller rotatably mounted on the other limb of said U-shaped cranked arm and having an axis of rotation parallel to the pivot axis of said U-shaped cranked arm; a load-bearing guide roller rotatably mounted on the other limb of said U-shaped cranked arm and having an axis of rotation at right angles to the pivot axis of said U-shaped cranked arm; and a substantially horizontal guide track extending along the side of the vehicle from a point adjacent both said defined opening and said intermediate point on the trailing edge of the sliding door, said horizontal guide track having a substantially C-shaped cross-section and terminating in a hooked portion extending inwardly of the vehicle at said point adjacent said defined opening both the guide roller and the load-bearing guide roller mounted on the other limb of said U-shaped cranked arm being movably retained within said horizontal guide track so that, as the sliding door is moved from said first position to said second position, the movement of this guide roller and load-bearing guide roller along the horizontal guide track and around said hooked portion causes the trailing edge of the sliding door to move into sealing engagement with a corresponding side of said defined opening, whilst the movement of the guide roller and the load-bearing support roller of the first guide means in their respective tracks causes the upper leading edge of the door to move into sealing engagement with a corresponding edge of said defined opening, and the movement of the guide roller of the second guide means along the curved channel-shaped guide track causes the lower leading edge of the sliding door to move into sealing engagement with a corresponding edge of said defined opening.

4,157,847

METHOD AND APPARATUS FOR UTILIZING ACCUMULATED UNDERGROUND WATER IN THE MINING OF SUBTERRANEAN SULPHUR

R. L. Williams; Rene L. Latiolais; John L. Gabriel, all of New Orleans, La., and Robert L. Bouis, Pass Christian, Miss., assignors to Freeport Minerals Company, New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,879
Int. Cl.[2] E21C *41/14;* E21B *43/28*
U.S. Cl. 299—6 **20 Claims**



1. In a method of mining sulphur from a sulphur-bearing ore in a subterranean formation wherein hot water at a temperature sufficiently high to liquefy said sulphur underground is contacted therewith to heat it and convert it to liquid sulphur which is thereafter moved to the surface whereby said hot water is somewhat reduced in temperature and accumulates as a body of underground water above at least a part of said sulphur-bearing ore, that improvement utilizing the heat of said accumulated underground water, comprising, subterraneanly moving said accumulated underground water downwardly directly from said body of accumulated underground water to said sulphur-bearing ore to contact and heat additional sulphur-bearing ore.

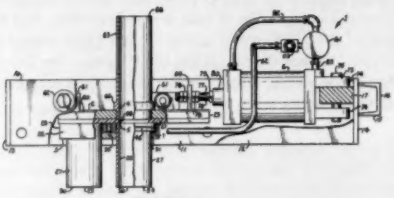
14. In apparatus for mining a subterranean sulphur-bearing ore body by liquefying the sulphur including means for piping it to the surface, wherein a zone of underground hot water accumulates above at least a portion of said sulphur-bearing ore body, the improvement comprising, means for subterraneanly moving a portion of said accumulated hot water downwardly directly from said zone to said ore body to contact and heat sulphur-bearing ore below said zone.

4,157,848

DIVERTER VALVE

David K. Smoot, Mission Woods, Kans., assignor to Smoot Co., Kansas City, Kans.

Filed Dec. 27, 1977, Ser. No. 864,919
Int. Cl.[2] B65G *53/56*
U.S. Cl. 406—182 12 Claims



11. In a diverter valve for pneumatic conveying systems, said diverter valve having first and second sliding plates with a port in each for conveying materials through the valve, the improvement comprising:

(a) a rigid seal ring slidably mounted in a mating groove in the second plate, and having a first end face thereof abuttingly sealing against the first plate about the port therein during a material conveying position;

(b) a resilient seal ring mounted on an outer marginal surface of said rigid seal ring, and having a free edge sealing engaging an outer side wall of said groove; and

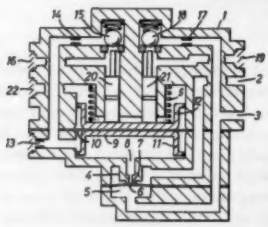
(c) pneumatic pressure means connected with said second plate, communicating with said groove, and exerting pressure on a second end face of said rigid seal ring, and resiliently urging the same toward said first plate wherein an airtight seal is formed between said ports.

4,157,849

CONTINUOUS QUICK SERVICE APPARATUS FOR VEHICLE BRAKING CONTROL

David J. Wickham, London, England, assignor to Westinghouse Brake & Signal Company Limited, London, England

Filed Jul. 26, 1976, Ser. No. 708,317
Claims priority, application United Kingdom, Aug. 16, 1975, 34176/75
Int. Cl.[2] B60T *15/44*
U.S. Cl. 303—38 5 Claims



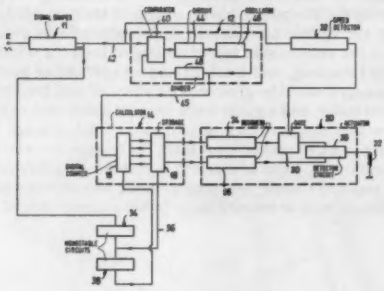
1. A valve apparatus for providing continuous quick service operation during service braking in a vehicle braking system, including a reference pressure signal input port and a brake pipe pressure signal input port, a pressure responsive means responsive to a pressure difference at said ports for permitting a fluid flow tending to equalize said pressure signals, and means responsive to said fluid flow to produce a control pressure on a further pressure differential responsive member which, responsive to said control pressure, controls one valve to assist a changing brake pipe pressure and controls another valve for modifying said control pressure to thereby cause repeated reciprocation of the said further pressure responsive member and thus effect pulsed assistance of changes in brake pipe pressure.

4,157,850

ELECTRONIC ANTISKID CONTROL DEVICE

Guy Marouby, Neuilly-sur-Seine, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Sep. 15, 1977, Ser. No. 833,533
Claims priority, application France, Oct. 4, 1976, 76 29752
Int. Cl.[2] B60T *8/10*
U.S. Cl. 303—109 12 Claims



1. An electronic antiskid control device for a motor vehicle brake system, comprising in combination, a frequency multiplier circuit responsive to a speed signal, the frequency of which represents the peripheral speed of one wheel of a vehicle and supplying an output signal whose frequency is such that the ratio between the frequency of the output signal and the frequency of the speed signal normally assumes a predetermined value equal to the multiplication factor of the multiplier when the peripheral speed of the said one wheel is substantially constant, the ratio between the frequencies of the output signal and speed signal being capable of deviating temporarily from its normal value in response to a variation in the frequency of the speed signal, the improvement wherein a calculating means **14** supplies at intervals of time a number which is a function of the ratio between the frequencies of the output signal and speed signal and which represents the wheel slip, an actuating means **20** is responsive to the value of the number supplied by the calculating means **14** so as to generate an antiskid signal to control an antiskid cycle, the calculating means **14** comprises a counting circuit **16** of which the input receives the output signal from the frequency multiplier circuit **12** and of which the counting period equals the period of the speed signal, and a storage element **18** connected to the output of the counting circuit **16**, the storage element **18** being capable of storing the value contained in the counting circuit in response to the supply of a store signal whose frequency equals the frequency of the speed signal, the storage element **18** supplying the number representing the wheel slip, and the store signal being supplied by a first monostable circuit **34** responsive to one edge of the speed signal.

4,157,851

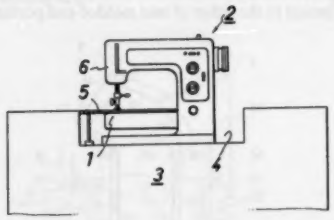
ASCENT AND DESCENT MEANS OF A FREE-ARM SEWING MACHINE

Yasushi Tomuro, No. 11-3, Tamagawa Denenchofu 2-chome, Setagaya-ku, Tokyo, Japan

Filed Jun. 17, 1977, Ser. No. 807,750
Int. Cl.[2] A47B *51/00*
U.S. Cl. 312—29 2 Claims

1. In a vertically adjustable mount for a free arm sewing machine in a cabinet, a combination comprising guiding means including a first vertical guide member secured to said sewing machine, a second vertical guide member secured to said cabinet and slidably fitting in with said first guide member; first

latch means including two vertically spaced holes in said first guide member and a spring biased pin arranged on said second guide member to engage one of said holes for arresting said machine in a selected working position; hand-operated unlatching means connected to said pin to release said pin from said hole; a stop member provided on said second guide member to hold said first guide member and thus the sewing machine in a storing position within said cabinet; and constant-



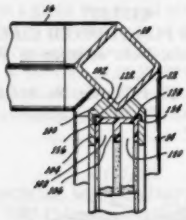
force spring means arranged between said cabinet and said sewing machine to balance the weight of the latter and of said guiding means wherein said spring means is adjusted to overbalance the said sewing machine; and further comprising second latch means having a spring-biased second pin arranged on one of said guide members and a plurability of notches provided on the other guide member to slidably engage with said second pin.

4,157,852

PANEL SUPPORT SYSTEM

Ralf G. Zacky, 1933 Parnell Ave., Los Angeles, Calif. 90025

Filed Dec. 23, 1977, Ser. No. 863,942
Int. Cl.[2] A47F *3/00*; F16B *12/00*
U.S. Cl. 312—140 **19 Claims**



1. A support system for panel members, including,

an outer frame located within a particular plane and including at least four tubular members each having substantially the same cross-section interconnected at end portions by joints to form the outer frame, and with the four tubular members located within the particular plane,

an inner frame located within the particular plane and including at least four moldings each having substantially the same cross-section extending along and complementary to the tubular members to form the inner frame and with the inner frame located within the outer frame and within the particular plane,

the moldings each including a groove extending along the length of the molding and with the groove having a configuration to receive a portion of the outer surface of the tubular member and with the grooves providing for the inner frame interlocked within the outer frame, and

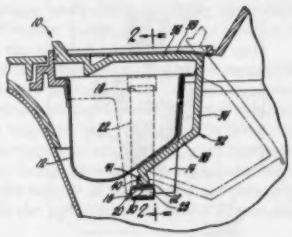
the moldings each including a channel extending along the length of the molding and with the channels receiving and supporting a panel member within the inner frame and within the particular plane.

4,157,853

CLOSURE MECHANISM

Lester G. Carey, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1977, Ser. No. 863,052
Int. Cl.[2] A47B *67/02*; A47F *5/08*
U.S. Cl. 312—246 **2 Claims**



1. A closure mechanism for an ashtray and the like, comprising a pair of oppositely disposed connector walls, a notch formed in the free end of each of said connector walls, a three sided cover member having an end wall and oppositely disposed side walls, with one of said side walls serving as a door portion, pivotal means formed on the other of said side walls pivotally connected at the ends thereof to said connector walls and adapted to being manually pivoted through a predetermined angle from a first position to a second position corresponding to closed and open positions of said door portion, a detent projection formed on said pivotal means adjacent each end portion thereof and extending along a predetermined plane through the axis of said pivotal means, a generally "U" shaped leaf spring including oppositely disposed side portions and a bottom portion, mounting means formed on the free end of each of said side portions for mounting on respective connector walls, and an "S" shaped connector portion integrally interconnecting the other end of each of said side portions and the adjacent end of said bottom portion, with the loop of each connector portion which is integrally connected to said bottom portion being mounted in said adjacent notch in said connector wall and exerting a force against said adjacent detent projection to thereby retain said door portion of said cover member in its closed position, and said detent projections forcing said loop and said bottom section outwardly while said cover member is pivoted through said predetermined angle unitl said detent projections are pivoted over-center with respect to said adjacent spring loops to thereby retain said door portion of said cover member in its open position by the force of said spring portions against said detent projections.

4,157,854

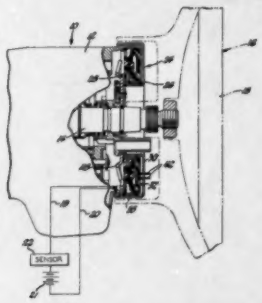
STEERING COLUMN ELECTRICAL CONNECTOR ARRANGEMENT

Howard D. Beauch, Hemlock, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1978, Ser. No. 898,912
Int. Cl.[2] H01R *39/00*
U.S. Cl. 339—3 S **3 Claims**

1. In combination with a motor vehicle steering assembly including a steering column member rotatably supporting a steering shaft fixed with a steering wheel having an occupant restraint cushion, said vehicle having a sensor for actuating said occupant restraint system, an electrical connector arrangement interposed between said steering member column and said steering shaft for allowing relative movement therebetween while continuously providing electrical continuity between said sensor and said occupant restraint cushion, said electrical connector arrangement comprising a stationary annular insulator member carried by said steering column member and formed with inner and outer concentric side wall, mounting means formed with said stationary insulator member

between the side walls and lying on a circle that is concentric to the side walls, a pair of metallic rings located on opposite sides of said mounting means and adapted to be electrically connected to said sensor, each of said rings supporting a plurality of contact brushes that extend laterally towards the adja-



cent side wall, and a pair of annular conductor members fixed with the steering shaft and being located in intersecting planes when viewed in cross section for continuously maintaining engagement with the contact brushes during rotation of said steering shaft so as to provide current to said occupant restraint system upon operation of said sensor.

4,157,855

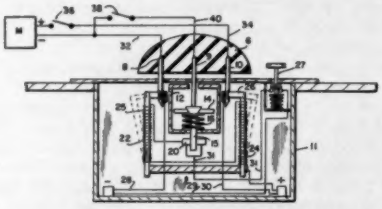
ELECTRIC SOCKET AND PLUG

See F. Cha, 47-09 Newtown Rd., Astoria, N.Y. 11103

Filed Sep. 19, 1977, Ser. No. 834,189

Int. Cl.[2] H01R *13/62*

U.S. Cl. 339—45 R **2 Claims**



1. An electric socket comprising an outer casing, an inner housing, a slide member disposed in the housing and adapted to engage a prong of an electric plg, power terminals adapted to become electrically connected to other prongs of the plug, a spring in outwardly biasing engagement with said slide member, there being provided bimetallic bars adapted in normal position to retain said other plug prongs, there being a coil wound on each bar in electrical connection with said member which on energizing is adapted to cause the deflection of said bars from plug retaining position thereby permitting the slide member to dislodge the plug from said socket.

4,157,856

UNITARY STRUCTURE FLEXIBLE RETAINING CLIP

George J. Shevchuk, Old Bridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 10, 1978, Ser. No. 904,470

Int. Cl.[2] A44B *21/00;* **H01B** *17/16;* **H01R** *13/54*

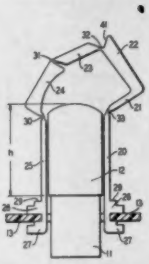
U.S. Cl. 339—75 R **11 Claims**

1. A retaining clip for use with a multipart connector where a first portion of the connector is affixed to a panel and a second portion of the connector is detachably matable to said first portion, said retaining clip arranged for maintaining said first and second portions of said connector in said mated relationship, said retaining clip characterized in that there comprises

molded end portions for positioning said retaining clip with respect to said panel,

said retaining clip being a unitary structure having a plurality of flexible knees molded therein, said knees separating segments of said retaining clip,

a first clip segment disposed next adjacent to one of said molded end portions, a second clip segment disposed next adjacent to the other of said molded end portions, said first



and second segments constructed to be substantially the same length as the distance between said panel and the top surface of said second portion of a mated connector, and

other segments of said structure positioned between said first and second segments and disposed about said flexible knees, and other segments arranged to fold upon themselves at said knees, said folds bringing at least two of said segments over a center line of said top of a mated second connector portion to form a locked barrier around said mated connector.

4,157,857

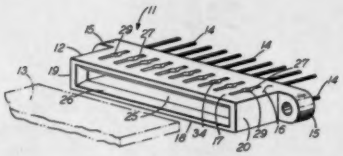
EDGE CONNECTOR FOR PRINTED CIRCUIT BOARDS

Julius A. Sabo, Colonia, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,822

Int. Cl.[2] H01R *13/50*

U.S. Cl. 339—176 MP **14 Claims**



1. A connector comprising:

a housing;

a passageway located in the housing for guiding a connecting element insertable in such passageway;

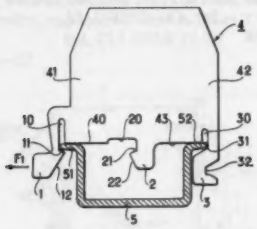
at least one contact rotatably mounted in the housing adjacent the passageway, the contact having a portion extending into the passageway and into the path of the connecting element to engage the connecting element with selective rolling motion across its surface; and

at least one cantilevered contact spring anchored in the housing and extending past the contact for yieldably urging the contact into the passageway and against the connecting element upon insertion of the connecting element into the passageway and into engagement with at least one contact area on its surface, the contact spring also extending from the housing for connection to an external circuit.

4,157,858
DEVICE FOR FIXING A CASING ON A SECTION BAR WITH PARALLEL RIMS

Jean Debaigt, Maisons Laffitte, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed May 17, 1978, Ser. No. 906,810
Claims priority, application France, May 27, 1977, 77 16278
Int. Cl.[2] H01R 9/16
U.S. Cl. 339—198 GA 6 Claims

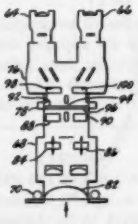


1. A structure for fixing a casing having opposite sides to a support bar having parallel rims, said bar being either of two different types, one type having rims turned outwards and the other type having rims turned inwards, said casing comprising a base having a flat which bears on one of the rims of either type bar, said flat being flanked on one outer side by a first resilient fixing tab which includes a first resilient lock notch at one side and at the level of the flat and on the inner side of said first tab by a second fixing tab which includes a second, rigid fixing notch at the level of the flat, said flat being flanked on the other outer side by a third resilient fixing tab having a rigid fixing notch disposed at the root of said third fixing tab and having a second resilient lock notch disposed at the end of said third resilient tab; whereby, the end of said rim at said one side co-operates with a given one of said notches depending on the type of bar, while on the other side of the casing, the other end of the other rim co-operates simultaneously with a rigid fixing notch disposed at the root of said third fixing tab or with said second resilient lock notch disposed at the end of said third resilient tab, depending upon the type of bar.

4,157,859
SURGICAL MICROSCOPE SYSTEM

Clifford Terry, 7087 Columbus, Anaheim, Calif. 92807

Filed May 26, 1977, Ser. No. 800,613
Int. Cl.[2] G02B 21/20
U.S. Cl. 350—35 31 Claims



1. A surgical microscope for use during suturing of an incision in the cornea to reconstruct the cornea of an eye in accordance with a predetermined radius of curvature, the combination comprising:

a binocular microscope having an entrance lens adapted to be positioned a fixed distance from the eye to provide a surgical field of view through the eyepieces;

means adjacent said entrance lens for projecting a reference image on said cornea;

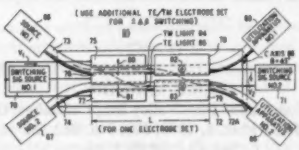
means positioned at least partially within said microscope for optically forming at least one other substantially identical image viewable through said microscope with said reference image, said means being so-positioned to permit a portion of the reference image to pass through said microscope undeviated with the undeviated portion of said reference image being in the portion of the cornea where the incision has beem made; and

means for adjusting at least one of the magnetification power of said microscope and the optical alignment of said optical forming means for varying said reference image and said at least one other substantially identical image into a predetermined image pattern, said predetermined image pattern being viewable through said microscope only when the sutures of the incision are properly tensioned to provide the predetermined radius of curvature.

4,157,860
DUAL POLARIZATION ELECTROMAGNETIC SWITCH AND MODULATOR

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 11, 1977, Ser. No. 840,594
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 11 Claims


(USE ADDITIONAL TE/TM ELECTRODE SET FOR T & B SWITCHING)
TM LIGHT 84
TE LIGHT 86
SWITCHING SIG. SOURCE NO.1
SWITCHING SIG. SOURCE NO.2
(FOR ONE ELECTRODE SET)

1. An optical modulator/switch comprising:

a pair of waveguides, made of an electrooptic material, extending coextensively over a coupling interval L;

said waveguides being formed along one major surface of a substrate of lower refractive index and being capable of supporting propagating modes of optical wave energy in two, mutually orthogonal directions of polarization;

and means for producing electric field components within said waveguides having components parallel to said directions of polarization;

CHARACTERIZED IN THAT

said mutually orthogonal electric field components extend over coextensive portions of said coupling interval, and are separately controllable.

4,157,861
OPTICAL BEAM STEERING SYSTEM

Kirk E. Davies, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 3, 1977, Ser. No. 821,269
Int. Cl.[2] G05D 25/00
U.S. Cl. 350—285 7 Claims

1. An optical beam steering system comprising:

a base plate;

a reflective surface supported on said base plate to receive and reflect an optical beam;

a first pair of resilient means attached to support said base plate at opposite points on a first support axis, and equidistant from the geometric center of said base plate;

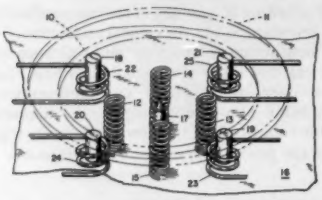
a second pair of resilient means attached to support said base plate at opposite points equidistant from the geometric

center of said base plate, defining a second support axis at right angles to said first support axis;

a pivotal support positioned at said geometric center of said base plate;

a first pair of permanent magnets extending from said base plate at opposite points equidistant from said pivotal support and defining a first axis of movement;

a second pair of permanent magnets extending from said base plate at opposite points equidistant from said pivotal



support and defining a second axis of movement at right angles to said first axis of movement;

a plurality of electrically conductive coils, each disposed around one of said permanent magnets and spaced therefrom; and

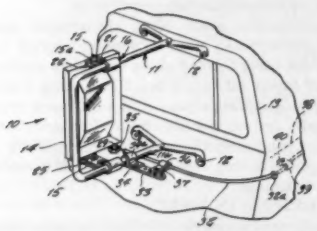
a selectively variable electrical signal source, connectable to said coils for generating electromotive forces transmitted to said base plate whereby to angularly position said base plate and reflective surface about said first and second axes of movement commensurate with the applied signals.

4,157,862

CABLE KIT FOR MAKING A REMOTE CONTROLLED TRUCK MIRROR

Raymond Jackson, 3305 Pine Valley Rd., Columbus, Ohio 43219

Filed Mar. 1, 1978, Ser. No. 882,335
Int. Cl.[2] G02B *5/08*
U.S. Cl. 350—303 **6 Claims**



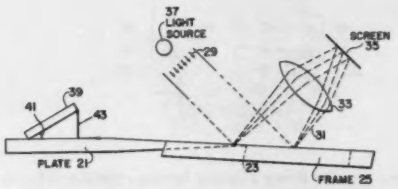
1. A cable kit mounted on a truck, for making a remote controlled truck mirror, comprising, in combination, a mirror unit, said mirror unit being supported in a tubular support mounted on a truck door of a truck, and remote control means for rotating said mirror unit by a driver of said truck; said means comprising a mirror frame on said mirror unit having an outward extending bolt, an upper and a lower bracket on said tubular support each receiving said bolt within an opening thereof, a nut fastener on said upper bracket providing means to raise or lower said mirror frame, an offset set screw fastener near a bottom of said mirror frame, retaining a loop on an end of a cable enclosed in a plastic sleeve, a third bracket secured to a leg of said tubular support, a cable clamp supported on said third bracket grasping a longitudinally intermediate portion of said cable sleeve, and said sleeve of said cable extending through an opening of a body of said truck, said sleeve being secured to a dashboard of said truck; a control knob being secured to an end of said cable, a second clamp secured on said sleeve enabling a driver to manipulate said control knob secured on said end of said cable, said second clamp being secured fixedly to a gear shift, a coil received on said cable and abutting at one end with said control knob and abutting at its other end with a flange adjacent said second clamp.

4,157,863

ACOUSTO-OPTIC MODULATOR

Joseph A. Clark, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1978, Ser. No. 894,059
Int. Cl.[2] G02F *1/11*
U.S. Cl. 350—358 **10 Claims**



1. A light modulating device comprising:

a plate tapered at one end thereof to terminate in a wedge configuration;

a frame coupled to said wedge;

means for exciting surface waves in said plate; and

light reflective means positioned over said frame and plate, said light reflective means in contact with said frame;

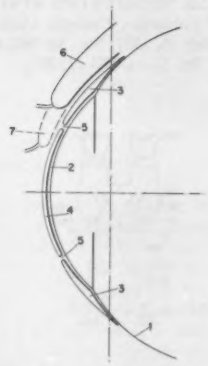
whereby a light beam incident upon said reflective means is spatially and temporally modulated by said surface waves as it is reflected from said reflective means.

4,157,864

CONTACT LENS EYEBALL CENTERING SUPPORT OF SOFT MATERIAL FOR USE IN CONJUNCTION WITH HARD CONTACT LENS

Bruno Koller, Hasengasse 23, and Friedrich Kilb, Scheidwald Str. 43, both of 6 Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 28, 1977, Ser. No. 771,646
Int. Cl.[2] G02C *7/04*
U.S. Cl. 351—160 H **2 Claims**



1. An aid for wearing a hard corneal contact lens comprising a centering support to be worn on a human eye and having a shape conforming to the curvature thereof, said support formed from a soft contact lens material, said support further having means forming a central opening in the support with a diameter which corresponds substantially to the diameter of a hard contact lens, whereby a hard contact lens can be indepen-

dently inserted into the opening to adhere to an eye without being affixed to the support.

4,157,865

TRANSPORT MECHANISM FOR SOUND CINE CAMERA OR THE LIKE

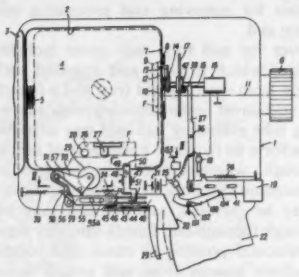
Otto Kantner, and Peter R. von Belvärd, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Continuation-in-part of Ser. No. 791,210, Apr. 27, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 919,984

Claims priority, application Austria, May 11, 1976, 3447/76

Int. Cl.[2] G03B *31/02*

U.S. Cl. 352—27 **9 Claims**



1. In an apparatus for transporting a tapelike information carrier, stored in a cassette, past a transducer in a compartment of a casing provided with closure means for securely retaining an inserted cassette in said compartment,

the combination therewith of:

drive means for advancing said information carrier, said drive means including a rotatable capstan in said compartment, a pinch roller in said compartment and movable support means for relatively displacing said pinch roller and said capstan from a separated position into a closely juxtaposed position in which said information carrier is clamped between said pinch roller and said capstan for entrainment by the latter;

operating means for activating said drive means, said operating means including a manually movable control member having an inactive normal position and an active off-normal position;

releasable coupling means linking said control member with said support means for relatively displacing said pinch roller and said capstan into their juxtaposed position upon movement of said control member into said off-normal position;

restoring means acting upon said coupling means for urging said pinch roller and said capstan into their separated position; and

decoupling means responsive to movement of said closure means into an open position for releasing said coupling means and rendering said restoring means effective to separate said pinch roller from said capstan regardless of the position of said control member.

4,157,866

MOTION PICTURE CAMERA

Masamichi Toyama; Tomoshi Takigawa, both of Machida, and Hideto Iwama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1977, Ser. No. 841,448

Claims priority, application Japan, Oct. 14, 1976, 51/123183

Int. Cl.[2] G03B *1/60*

U.S. Cl. 352—171 **21 Claims**

1. A motion picture camera, comprising:

(a) a camera housing;

(b) an electric power supply circuit;

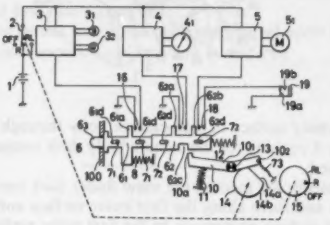
(c) film feeding means driven by an electric current supplied from said electric power supply circuit for feeding film;

(d) first switching means for making electric connection between said electric power supply circuit and said film feeding means, the electric connecting being normally cut off;

(e) information indicating means operated by an electric current supplied from said electric power supply circuit to indicate the operating condition of the camera;

(f) second switching means which makes electric connection between said electric power supply circuit and said information indicating means, the electric connection being normally cut off;

(g) interlocking means for interlocking (1) a first control means shiftable between a position in which it actuates said second switching means to effect said electric connection and another position in which it releases the second switching means to cut off said electric connection with



(2) a second control means shiftable between a position in which it actuates said first switching means to effect said electric connection and another position in which it releases said first switching means to cut off said electric connection, the first and second control means being arranged to move simultaneously or individually, the interlocking means being provided with first urging means which constantly urges said first control means toward its position in which it holds said second switching means in a state of cutting off said electric connection and with second urging means which constantly urges said second control means toward its position in which it holds said first switching means in a state of cutting off said electric connection; and

(h) locking means which, against the urging force of said second urging means, selectively locks only said second control means in its position in which said first switching means is held in a state of effecting said electric connection.

4,157,867

SINGLE-LENS REFLEX CAMERA

Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1977, Ser. No. 838,467

Claims priority, application Japan, Oct. 6, 1976, 51-134531[U]

Int. Cl.[2] G03B *17/04, 19/12*

U.S. Cl. 354—158 **3 Claims**

1. A single-lens reflex camera comprising:

a dark compartment constituting a camera body and having a front portion;

an objective lens disposed on the front portion of the camera body compartment;

a film carrier disposed perpendicularly with respect to the optical axis of the objective lens, the film carrier being disposed inside the camera body dark compartment;

a view finder dark compartment;

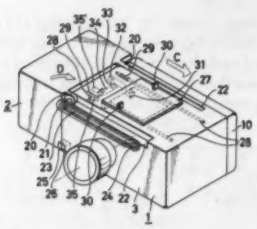
a view finder optical system disposed inside the view finder dark compartment;

a mirror member disposed inside the camera body compart-

ment for guiding a light from the objective lens to said view finder optical system;

an optical aperture provided in an outer wall of the camera body dark compartment and disposed in an optical path of the light directed to the view finder optical system to allow the light to emerge out of the camera body dark compartment;

an optical aperture provided in an outer wall of the view finder dark compartment for introducing the light emerging from the optical aperture of the camera body dark compartment into the view finder dark compartment;



a first outer surface of said camera body through which an optical opening for the camera body dark compartment is formed;

guide means for guiding the view finder dark compartment back and forth along the first outer surface and a second outer surface continuous to the first outer surface;

means provided on the optical opening of the dark compartment for covering the optical opening;

means for locking the opening of the covering means; and

means for releasing the locking means when the dark compartment moves from the second outer surface to the first outer surface through which the optical opening is provided.

4,157,868

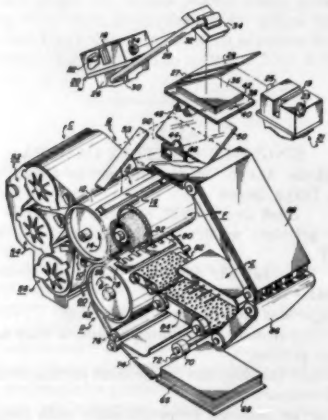
PHOTOGRAPHIC PROCESSING TRAY

Samuel Needleman, 177 Louis St., Maywood, N.J. 07607

Filed Jun. 20, 1977, Ser. No. 808,078

Int. Cl.[2] G03D *13/04*

U.S. Cl. 354—307 **1 Claim**



1. A photographic processing tray assembly for processing photographic sheet material under lighted conditions, said tray assembly comprising:

a tray having a horizontal bottom surface, side walls extending upwardly from said bottom, a rear wall portion joined at a first end to a second end of said bottom and extending upwardly at an angle of approximately 120° therefrom, a horizontal tray portion joined at a first end to a second end of said rear wall portion and extending away from and generally parallel to said bottom, and a rear wall extending upwardly from a second end of said horizontal platform, said rear wall and said horizontal platform forming a trough for the receipt of a photographic processing solution when said front wall is elevated to incline said bottom surface;

a plurality of rounded surfaces formed on the upper ends of said front, side, and rear walls, said rounded surfaces extending outwardly and downwardly from said walls;

an indention formed in said rounded surfaces at an intersection of two of said walls, said indentation serving as a pour spout for removing said processing solution from said tray; and

a cover for said tray, said cover including down turned edges which fit over said rounded surfaces to prevent light from entering said tray, and a funnel shaped opening in said cover communicating with a downwardly extending tube extending into said tray adjacent said horizontal platform to facilitate placement of said solution into said trough, whereby photographic sheet material may be placed on said bottom surface, said front wall of said tray may be elevated, said solution may be placed in said trough through said funnel, said tray may be returned to a horizontal position to cause said solution to flow in a uniform manner from said trough down said rear wall portion onto said sheet material to process said material and said solution may then be removed from said tray by being poured out through said spout.

4,157,869

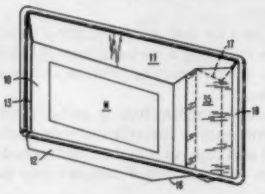
TRANSPARENCY REPRODUCING MACHINE

James E. Bollman, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 18, 1977, Ser. No. 798,194

Int. Cl.[2] G03G *15/01*; G03B *27/32*

U.S. Cl. 355—4 **5 Claims**



1. A xerographic printing machine arranged to reproduce on the same support material a plurality of transparencies side by side without overlap comprising

a photoconductive recording member,

means for electrostatically, uniformly charging an image forming area of the photoconductive member,

forming means for forming a plurality of nonoverlapping latent electrostatic images side by side on the imaging area of the photconductive member including at least a pair of slide projectors arranged to project at least a pair of nonoverlapping light images onto the charged portion of the photoconductive member to form latent images thereon corresponding to enlargements of the transparencies being reproduced, said forming means including a transparent platen member disposed in a light receiving relationship with the light images transmitted from the pair of slide projectors and a field lens mounted on the platen member,

means for developing substantially simultaneously each latent image with particles to form at least two nonoverlapping power images on the photoconductive member,

means for transferring each of the powder images from the

photoconductive member to the same sheet of support material and

means for fixing substantially permanently each of the powder images to the same sheet of support material to which the side by side powder images are transferred.

4,157,870

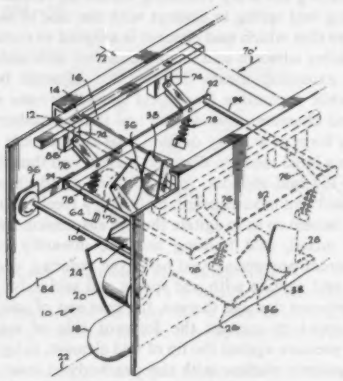
EXPOSURE STATION

William E. Roberts, Palos Verdes Penn., Calif., assignor to AM International, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 652,635, Jan. 26, 1976, abandoned. This application Aug. 12, 1977, Ser. No. 823,931

Int. Cl.[2] G03B *27/04*

U.S. Cl. 355—121 **9 Claims**



1. In an exposure station which includes an exposure plane region and a light source positioned to emit light rays toward said exposure region, the improvement comprising:

a pair of shutter elements, each pivotally mounted about a corresponding predetermined axis located at a height between said lamp and the exposure plane region; and

means for rapidly pivoting said elements simultaneously between first position wherein said elements lie over substantially opposite halves of the paths of light rays travelling directly from said light source towards said exposure region, to block such light rays to a second position wherein said elements lie beside opposite sides of said light source wherein each of said shutter elements is reflective at the surface thereof which faces said exposure plane when the elements are in said first position, and when said elements are in said second position they reflect light from said lamp to said exposure plane region.

4,157,871

SYSTEM FOR RATE IMMUNONEPHELOMETRIC ANALYSIS

Robert J. Anderson, Orange, and Robert M. Studholme, Tustin, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 692,089, Jun. 2, 1976, abandoned. This application May 16, 1977, Ser. No. 796,621

Int. Cl.[2] G01N *21/00, 31/00*

U.S. Cl. 356—341 **19 Claims**

1. Immunonephelometric analysis apparatus comprising:

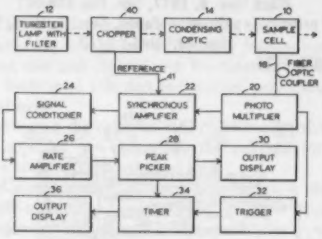
(a) a cell for holding a sample containing precipitin-forming antigen or antibody;

(b) means for producing and directing a light beam into a sample in said cell;

(c) photodetector means for detecting scattered light from said sample and for producing a signal indicative of the quantity thereof;

(d) first signal differentiator means connected to said photodetector means for producing a first rate signal indicative of the rate of change with respect to time of said quantity of scattered light;

(e) first peak rate detector means connected to said first



signal differentiator means for detecting a maximum value of said first rate signal; and,

(f) trigger means for producing a start signal upon initiation of an immunochemical reaction in said cell.

4,157,872

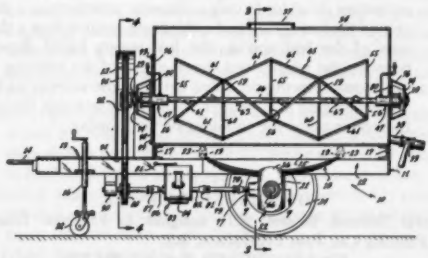
MIXING-TANK TRAILER

Sammy Y. Davido, Sr., 5008 Muscatel, San Gabriel, Calif. 91776

Filed Apr. 10, 1978, Ser. No. 894,825

Int. Cl.[2] B28C *5/08;* B01F *7/02*

U.S. Cl. 366—64 **9 Claims**



1. A mixing-tank trailer comprising:

a trailer frame provided with a hitch on the front thereof for engaging a towing vehicle;

a differential housing having wheels on the side ends thereof for supporting said trailer frame, said differential housing including half-axles in the sides thereof engaging said wheels, a differential output shaft disposed normal to the axes of said half axles, and differential gearing for coupling the inner ends of said half axles and said differential output shaft;

a tank mounted on said trailer frame, said tank having a mixer shaft encompassed by mixing blade members mounted for rotation therein; and

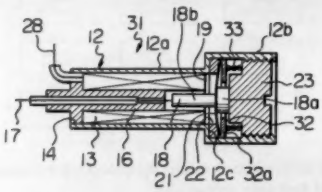
reduction gearing means for drivingly connecting the differential output shaft to the mixer shaft;

whereby as said mixing-tank trailer is being towed its wheels rotate the half-axles to drive the differential output shaft and thereby the mixer shaft to mix the liquid carried in the tank.

4,157,873
DOT PRINTING APPARATUS

Minoru Ito, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1977, Ser. No. 858,057
Claims priority, application Japan, Dec. 7, 1976, 51/146106
Int. Cl.[2] B41J 3/10
U.S. Cl. 400—124 2 Claims

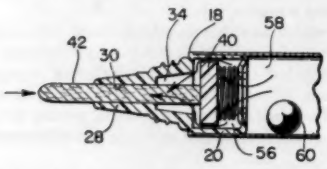


1. A dot printing apparatus comprising:
a housing formed with a bore;
a dot printing wire axially slidably received in the bore, a first end of the wire extending external of the housing;
a ferromagnetic core fixed to a second opposite end of the wire;
an electromagnetic coil operatively positioned relative to the core such that electrical energization thereof attracts and axially moves the core and wire such that the first end of the wire extends further from the housing to print a dot;
a leaf spring fixed to the core for urging the core and wire toward retraction into the housing, the leaf spring normally resiliently engaging a shoulder of the housing;
a stopper normally engaging the core and urging the same so as to deform the leaf spring to resiliently engage the shoulder of the housing;
an annular washer provided between the stopper and the shoulder of the housing, the core extending through the washer, the washer being formed with an annular, axially extending shoulder having a diameter greater than a diameter of the leaf spring and a thickness greater than a thickness of the leaf spring, the leaf spring being disposed between the washer and the shoulder of the housing; and
a compression spring provided between the stopper and the washer urging the washer so that the annular shoulder thereof engages the shoulder of the housing.

4,157,874
DYE MARKING DEVICE

David Durand, Bristol, R.I., assignor to Freeman Transfer Printing Co., East Providence, R.I.

Filed Apr. 10, 1978, Ser. No. 895,228
Int. Cl.[2] B43K 8/02, 5/08
U.S. Cl. 401—4 2 Claims

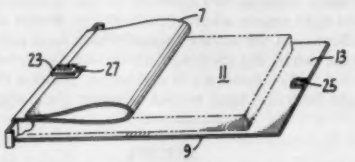


1. A marking device comprising an elongated closed body capable of manipulation by the human hand, said body comprising first, second and third chambers serially disposed with respect to each other along the length of said body, said first chamber disposed at the forward end of said body and terminating at its forward end in an open ended bore having an elongated porous marking element frictionally and slidably extending therethrough in communication with said first chamber at one end thereof and projecting outwardly from the open end of said bore and the other end thereof, said second chamber adjacent said first chamber and disposed to the rear thereof, a shoulder inwardly projecting from said body and disposed between said first and second chambers, said shoulder defining a centrally disposed opening communicating between said first and second chambers and a valve seat, a valve and a valve spring disposed in said second chamber, said valve normally urged by said spring against said shoulder so as to normally separate said first and second chambers from each other, said body including a separable forward member, said member defining said first chamber, said open bore, and said valve seat, said separable member having a portion rearwardly extending from said valve seat and defining a housing for said spring, said housing having inwardly extending means for restraining and maintaining said spring in contact with the side of said valve opposite to that which said element is adapted to contact, said third chamber adjacent said second chamber with said housing inwardly extending means defining the adjacent boundries thereof while permitting free liquid access between said first and second chambers, said second and third chambers having ink in the form of a finely divided heat sublimatible dye suspended in a lquid medium disposed therein and thus forming a reservoir for said element, means in said third chamber for keeping said dye in suspension, including a freely rollable ball disposed therein so as to agitate the dye suspension and keep it properly mixed, said housing and the inwardly extending means thereof preventing said ball from entering said second chamber and contact with said spring and said valve member so as to prevent damage thereto, the rear end of said element being adapted to contact the forward side of said valve, whereby pressure against the tip of said element, as by pressing the tip against a surface with the pen body at least partially elevated causes said valve to open and ink to flow by gravity into said first chamber into contact with said element.

4,157,875
BINDER FOR COMPUTER PRINTOUT

Gertrude Smith, and Joe D. Giulie, both of Palo Alto, Calif., assignors to Devoke Company, Palo Alto, Calif.

Filed Nov. 16, 1977, Ser. No. 851,952
Int. Cl.[2] B42F 3/00, 15/04
U.S. Cl. 402—4 4 Claims



1. A binder for computer printout sheets or the like comprising in combination:
a. a spine having a length approximately equal to the height of a sheet,
b. retaining means mounted on said spine adapted to engage mating holes in said sheets,
c. front and back cover members attached to and extending outwardly from said spine, each cover having a flexible center portion,
d. said front cover member being about the width of a sheet and said back cover member extending beyond the width of a sheet,
e. a notch in said front cover,
f. a first piece of Velcro on the outside surface of the front cover adjacent to the spine, said Velcro being located opposite said notch whereby when said front cover is

folded back upon itself, said Velcro will extend through the notch,

g. a complementary piece of Velcro on the inner surface of the back cover, said Velcro on the back cover being positioned in line with said notch on the front cover, whereby

h. said back cover can be folded over said sheets and said front cover folded back to engage the two Velcro pieces.

4,157,876

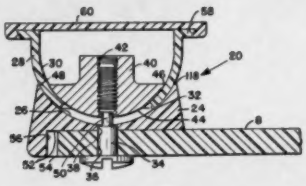
LOCKABLE ARTICULATED JOINT

Mario DiGiulio, c/o Spectra Industries Corp., 405 Baily Rd., Yeadon, Pa. 19050

Division of Ser. No. 741,798, Nov. 15, 1976, Pat. No. 4,088,129. This application Mar. 15, 1978, Ser. No. 886,897

Int. Cl.[2] F16C *11/06*; F16D *1/12*

U.S. Cl. 403—90 **3 Claims**



1. A lockable articulated joint comprising:

a socket member having a concave, substantially frusto-spherical socket surface, and a hole extending from the concave socket surface to the opposite side of said socket member;

a hollow member having a substantially frusto-spherical outer surface with a radius of curvature approximating that of said socket surface, a substantially frusto-spherical inner surface approximately concentric with said outer surface, and means providing a hole extending from said inner surface to said outer surface to permit a locking fastener to extend through the hollow spherical member while allowing universal articulation between said socket and said frusto-spherical member through a limited range, said hollow member extending into and engaging said socket member;

a locking member having a substantially frusto-sperhical outer surface engaging the inner surface of said hollow member and having a radius of curvature approximating that of the inner surface of said hollow member; and

a locking fastener extending through the hole in said socket member and the hole in said hollow member, and comprising means for releasably forcing said locking member toward said socket member to clamp said hollow member therebetween in a fixed relationship to said socket member;

the radius of curvature of the outer surface of said locking member being slightly greater than that of the inner surface of said hollow member, and at least one member of said locking member and said hollow member being resilient at the locations on its surface which engage the other of said locking and hollow members within said limited range of articulation.

4,157,877

APPARATUS FOR COMPACTING SUBGRADE AND PAVEMENT MATERIALS

Billy R. Lee, Newton, N.C., assignor to B.R. Lee Industries, Inc., Charlotte, N.C.

Filed Apr. 3, 1978, Ser. No. 893,031

Int. Cl.[2] E01C *19/26*

U.S. Cl. 404—128 **28 Claims**

1. A self-propelled road rolling machine for compacting subgrade and pavement materials, characterized by the ability to selectively perform a plurality of distinct road rolling functions, including leveling the underlying material to obtain a smooth surface, or kneading and sealing the underlying material, to thereby facilitate a road building operation, and comprising

a frame;

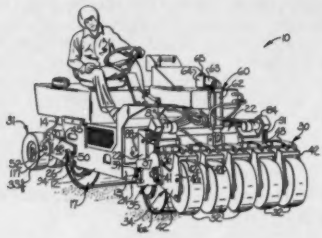
a pair of hard surfaced cylindrical rollers;

means mounting one of said cylindrical rollers to said frame adjacent one end thereof and for rotation about a transverse, horizontal axis and for pivotal movement about a vertical axis;

means mounting the other of said cylindrical rollers to said frame adjacent the other end thereof and for rotation about a transverse, horizontal axis;

a pair of wheel assemblies each comprising a plurality of coaxially aligned and spaced apart resilient wheels;

means mounting one of said wheel assemblies to said frame adjacent said one end thereof for movement between a first non-operative position having a ground engaging elevation above that of said one cylindrical roller, and a second operative position having a ground engaging elevation below that of said one cylindrical roller, and for pivotal movement about a vertical axis;



means mounting the other of said wheel assemblies to said frame adjacent said other end thereof and for movement between a first non-operative position having a ground engaging elevation above that of said other cylindrical roller, and a second operative position having a ground engaging elevation below that of said other cylindrical roller;

means operatively related to said wheel assembly mounting means for raising and lowering each of said wheel assemblies so that each wheel assembly can be selectively raised to its first position and lowered to its second position;

steering means mounted on said frame for selectively pivoting said one cylindrical roller and said one wheel assembly about its associated vertical axis;

a prime mover mounted to the frame; and

power transmission means mounted on said frame for selectively coupling the prime mover to at least one of said cylindrical rollers and to at least one of said resilient wheels, to thereby propel the machine.

4,157,878

CONNECTING APPARATUS FOR HINGEDLY AND SLIDABLY CONNECTING AN ATTACHMENT TO SELF-PROPELLED MINE VEHICLE

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Mar. 3, 1978, Ser. No. 883,161

Int. Cl.[2] E21C *11/02*

U.S. Cl. 405—303 **23 Claims**

1. A self-propelled vehicle for use in a mine comprising,

a mobile body,

traction means for propelling said mobile body along a mine floor,

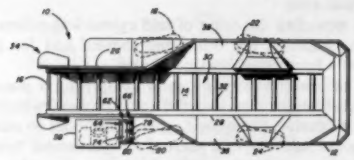
an attachment positioned adjacent to said mobile body,

said attachment having a body portion,

connecting means for slidably and hingedly connecting said attachment to said mobile body,

said connecting means including a slide assembly extending between and connected to said attachment and said mobile body,

said slide assembly having a cooperating guide member and guide rail for facilitating upward and downward movement of said attachment relative to said mobile body as



said attachment body portion travels over the uneven surface of the mine floor, and

a hinge assembly associated with said slide assembly for hingedly connecting said attachment to said mobile body so that said attachment is freely pivotal about a pivotal axis located between said attachment and said mobile body to permit pivotal movement of said attachment relative to said mobile body as said attachment travels over the uneven surface of the mine floor.

4,157,879

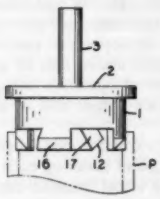
PIPE REAMING TOOL

Lawrence Steele, 3199 Drinkwater Rd., R.R. #4, Duncan, B.C., Canada (V9L 3W8)

Filed Sep. 14, 1977, Ser. No. 833,171

Int. Cl.[2] B23B *45/06, 51/16*

U.S. Cl. 408—83 **3 Claims**



1. A pipe reaming tool for use with a bit driver, said tool comprising a hollow cylindrical cutting member having a plurality of cutting teeth disposed along the edge of one end of said cutting member and extending outwardly therefrom, wherein each of said plurality of cutting teeth having a prismatic configuration including first and second curved surfaces coincident with the outer and inner surfaces respectfully of said cutting member and a third curved surface, said third surface connected at one end thereof to said first surface at an edge disposed coincident with said outer surface at a first distance from said one end of said cutting member and connected to said second surface at an edge disposed coincident with said inner surface at a second distance from said one end, wherein said second distance is greater than said first distance, and a fourth surface, said fourth surface lying in a plane coincident with the longitudinal axis of said cutting member and intersecting said first, second and third surfaces to define trailing edges, and a fifth surface, said fifth surface being opposite said fourth surface and lying in a plane disposed at an acute angle with respect to the longitudinal axis of said cutting member and intersecting said first and second and third surfaces to define cutting edges, stop means connected to the other end of said cutting member for limiting the depth of the ream to a predetermined length, a rod, said rod connected at one end thereof to said stop means and projecting outwardly therefrom in a direction opposite to said plurality of cutting teeth for engagement by a bit driver for rotating said pipe reaming tool.

4,157,880

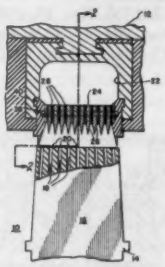
TURBINE ROTOR TIP WATER COLLECTOR

Nicholas Klompas, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,884

Int. Cl.[2] F02C *7/12*; F01D *5/18*

U.S. Cl. 415—115 **6 Claims**



1. In a gas turbine including a casing, a shaft rotatably supported in said casing, a turbine disc mounted on said shaft and turbine buckets mounted on the outer rim of said disc and extending radially outwardly therefrom, said buckets having radially extending coolant passages therein arranged to discharge coolant from the outer ends of said buckets, an arrangement for collecting the coolant fluid exiting from the coolant passages comprising:

(a) an annular chamber within said casing axially aligned with said buckets;

(b) a slotted annular wall interposed between said chamber and said buckets, said wall forming the entrance into said chamber for coolant fluid discharged from the buckets; and

(c) said wall having a plurality of adjacent, sharply angled faces forming the annular inner surface and having slotted passages extending angularly and radially through said wall at the converging bases of adjacent angled faces, whereby said faces diffuse the impact of the coolant fluid and direct the fluid to the passages and into said chamber.

4,157,881

TURBOSUPERCHARGER

Tamotsu Kasuya, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 19, 1977, Ser. No. 826,253

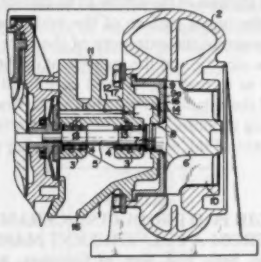
Claims priority, application Japan, Aug. 19, 1976, 51-110246[U]; Aug. 19, 1976, 51-110247[U]

Int. Cl.[2] F01D *25/18*

U.S. Cl. 417—407 **1 Claim**

1. In a turbosupercharger including a center housing having an inlet and an outlet for lubricant, a turbine casing mounted on said center housing at one end thereof, a compressor casing fixedly secured to said center housing at the other end thereof, a turbine shaft rotatably supported within said center housing, said turbine shaft having a turbine rotor at one end thereof within said turbine casing and a compressor rotor at the other end thereof within said compressor casing, said turbine shaft also having a shaft seal portion formed thereon at the turbine side thereof on which sealing means is adapted to be mounted to prevent lubricant leakage from said center housing to said turbine casing, and a chamber defined within said center housing, an opening thereof being adapted to receive the lubricant slung out of the outer periphery of the shaft seal portion of said

turbine shaft, wherein the improvement comprises means in the form of a communication hole formed within said center housing and angled slightly upwardly toward said turbine rotor relative to the axis of said turbine shaft for directly communicating said inlet for lubricant with said chamber, thereby



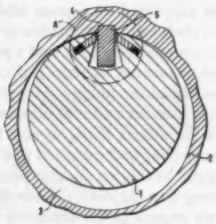
introducing pressurized fresh lubricant into said chamber in the form of an oil jet; and a baffle plate arranged between said chamber and said shaft seal portion of said turbine shaft so as to prevent the lubricant slung out of said shaft seal portion from striking the oil jet of newly introduced fresh lubricant from said inlet.

4,157,882

DEVICE FOR SEALING BETWEEN THE ROTARY PISTON AND THE SEPARATING SLIDE OF A ROTARY ENGINE, A ROTARY PISTON PUMP, OR THE LIKE

Alois Theisen, 5581 Grenderich, Fed. Rep. of Germany

Filed Nov. 17, 1977, Ser. No. 852,360
Int. Cl.[2] F16J *15/16*
U.S. Cl. 418—64 7 Claims



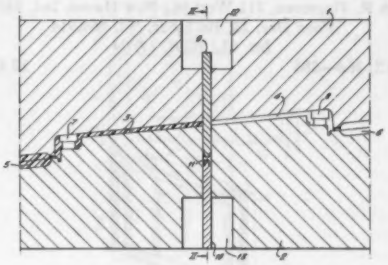
1. A sealing arrangement in a rotary machine having an eccentric rotary piston and a separating slide engaging a recess in the piston, said sealing arrangement providing a seal between the eccentric rotary piston and the separating slide and comprising: an eccentric rotary piston with a lengthwise slot; a spring-loaded strip guided in said lengthwise slot; a separating slide with side walls; said spring-loaded strip guided in said lengthwise slot of said rotary piston being in contact with each side wall of the separating slide throughout the entire length; front sides of said strip forming an obtuse angle with vertex in the region of the center line of said strip, said vertex being in sliding-motion contact with a side wall of said separating slide substantially along a line.

4,157,883

PROCESS AND APPARATUS FOR FORMING COMPOUND STRUCTURE OF VARIOUS PLASTIC MATERIALS IN MOLD HAVING APERTURED SLIDE PLATE

Pedro Mares, Sancho de Avila, 105-111, Barcelona, Spain

Filed Jan. 26, 1978, Ser. No. 872,645
Claims priority, application Spain, Jan. 26, 1977, 455,627
Int. Cl.[2] B29C *1/00, 5/00;* B29F *1/022*
U.S. Cl. 425—127 4 Claims



1. In injection molding apparatus, the improvement for plastically uniting a plurality of successive parts of respective plastic materials, comprising:

first and second mold halves forming between them a plurality of successive spaces defining said successive parts for respectively receiving injections of said respective plastic materials, and

plate means transversely disposed between said successive spaces and having an aperture of predetermined configuration,

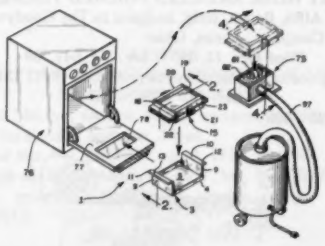
said plate means being movable between (1) a first position in which it blocks fluid communication between two adjacent ones of said successive spaces so that one of said parts can be molded in one of those two spaces and (2) a second position in which fluid communication between said two adjacent spaces can occur via said aperture so that while a second one of said parts is being successively molded in the other of said adjacent spaces said second part is concurrently joined through said aperture to the adjacent part in said one space to form an integral structure of said two injection molded parts.

4,157,884

VACUUM MOLDER

Ralph N. Andrae, 4224 Rigby Rd., Crystal Lake, Ill. 60014

Filed Aug. 1, 1977, Ser. No. 820,906
Int. Cl.[2] B29C *17/04*
U.S. Cl. 425—173 11 Claims



1. In a vacuum molding apparatus, a transportation and heat retention unit for heating and maintaining heated sheets for thermoplastic material comprising a tray having a bottom heat-reflective panel and mounting means thereabove, and

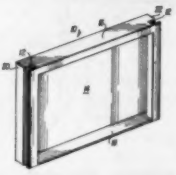
releasable means for mounting a sheet of thermoplastic on said mounting means above said bottom in vertically spaced relation thereto in a position to be radiantly heated thereby, maintaining said thermoplastic sheet, when heated and removed from the source of heat, in a supple state until said sheet is removed from said tray.

4,157,885

MOLD CONSTRUCTION METHOD AND APPARATUS FOR MAKING PLASTIC BACKINGS FOR SKATING RINK DASHER BOARDS

Joseph R. Tippmann, 211 West St., New Haven, Ind. 46774

Filed Dec. 23, 1977, Ser. No. 864,014
Int. Cl.[2] B29C *17/04*
U.S. Cl. 264—553 **12 Claims**



1. An apparatus for forming backing shells for skating rink dasher boards out of a single sheet of plastic material, said apparatus comprising:

(a) a vacuum box having four side walls, a bottom and an open side adapted to support a mold matrix, said matrix having a first and second set of two removably fitting forming members each, the forming members of each of said sets being disposed in said box opposite each other adjacent said sides and said bottom of said box to form a mold cavity,

(b) means communicating with the interior of said box for supplying a vacuum thereto,

(c) means in said forming members for distributing said vacuum to an area between said first and second sets of forming members and said sides and bottom of said box,

(d) heating means disposed above said box, and

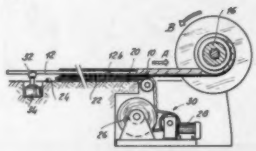
(e) a substantially horizontal frame means for clamping a sheet of said plastic material thereto, said frame being movable from a position adjacent said heating means for softening said plastic sheet to a position adjacent said open side of said box whereby upon creation of said vacuum said soft plastic sheet is drawn into said mold cavity to form said dasher board backing shell.

4,157,886

DEVICE FOR EXTRACTING VERY LONG CORES FROM RUBBERY HOSE ARTICLES FORMED THEREABOUT

Deregibus Alfio, Padua, Italy, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1977, Ser. No. 841,789
Claims priority, application Italy, Apr. 5, 1977, 23162 A/77
Int. Cl.[2] B29C *7/00*
U.S. Cl. 425—438 **13 Claims**



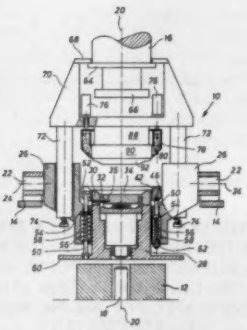
1. Device for the extraction of tubular articles, in particular pieces of great length of rubber hose, manufactured and vulcanized around a core of corresponding length, characterized by comprising, for the formation of a transporter carrying plane, a tape-like element, of a length almost equal to that of the article to be extracted, supported in a moveable way on an underlying support structure, and connected at one of its extremities to suitable means to bring about movement in a direction parallel to the axis of the article to be extracted, placed and weighing on the upper surface of the said tape-like element, and means to restrain the extremity of the core of the article, opposite to the direction of the movement of the said element, in such a way as to prevent the said core from following the movements of the tubular article, due to the dragging exerted essentially along its entire length, on the said article, as a result of the movement of the said tape-like carrying element.

4,157,887

PRESSING DIE FOR PRODUCING CERAMIC MOULDS FROM A PULVERULENT MASS

Günther Söthje, Selb, Fed. Rep. of Germany, assignor to Gebruder Netzsch, Maschinenfabrik GmbH & Co., Selb, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,088
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728630
Int. Cl.[2] B30B *5/02*; B28B *3/02, 7/08, 7/10*
U.S. Cl. 425—405 H **14 Claims**



1. A press tool for production of moulded ceramic articles such as plates, from powder material, including a lower tool part adapted to be supported on a press table and carrying a lower die, a matrix shell encircling the lower die and mounted to move up and down relatively to it, and a press plunger with an upper tool part connected thereon and carrying an upper die which on lowering of the plunger projects into the matrix shell, and, to fill the powder material into a cavity defined by the lower die and the matrix shell, an annular hopper in the form of a funnel encircling and mounted to slide axially on the upper die, the hopper having an annular outlet facing radially inwards and opening into the cavity when the hopper is in its lower position with respect to the upper die but closed by the upper die when the hopper is in a raised position relatively to the upper die.

4,157,888

GUIDE RAIL EXTRACTOR FOR MOLDED PLASTIC ARTICLES

Stephen L. Sikorski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

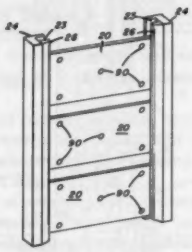
Filed Nov. 28, 1977, Ser. No. 855,142
Int. Cl.[2] B29F *1/14*
U.S. Cl. 425—556 **8 Claims**

8. Molding apparatus comprising:

a mold member having a mold surface to which a molded article adheres after a molding operation;

means for ejecting the molded article from said mold surface, said ejecting means including at least one ejection pin movable between a retracted position at which said pin slightly protrudes from said mold surface and an ejection position at which said pin extends from said mold surface, whereby the molded article remains affixed to said ejection pin as it moves to said ejection position;

means for moving said ejection pin between said retracted position and said ejection position; and



a pair of guide rails movable from a retracted position to an article receiving position to receive the molded article from said ejection means, each of said guide rails having a movable cam surface engageable by the molded article as said ejection pin moves to or is in said ejection position, such engagement causing said cam surfaces to move, thereby allowing the molded article to move past said cam surfaces and be retained by said guide rails upon retraction of said ejection pin.

4,157,889

BURNER FOR POWDERED FUEL

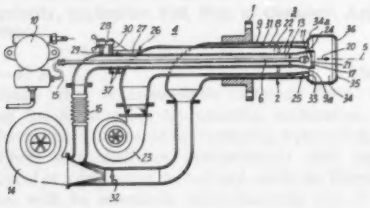
Michel G. Bonnel, Comines, France, assignor to Societe Colmant Cuvelier, Lille, France

Filed Apr. 13, 1977, Ser. No. 787,166

Claims priority, application France, Apr. 16, 1976, 76 11316; Dec. 22, 1976, 76 38687

Int. Cl.[2] F23M 9/00

U.S. Cl. 431—182 **22 Claims**



1. A burner for powdered fuel comprising an annular conduit for the injection of solid fuel in powder from entrained in air, a first conduit coaxial with and internal to said annular conduit and a second conduit coaxial with and external to said annular conduit, each of said first and second conduits having air supplied thereto, means forming a chamber, each of said three conduits having an end for discharging the flow therefrom into said chamber where the flows are mixed, means at the discharge end of said annular conduit for producing a substantially laminar or somewhat convergent flow of the fuel into said chamber, and means at the respective discharge ends of each of said first and second conduits for producing a vortex flow of air into said chamber.

4,157,890

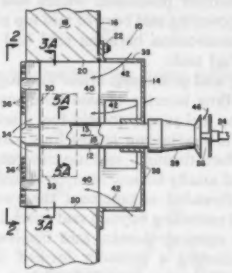
NOx ABATEMENT IN GAS BURNING WHERE AIR IS PREMIXED WITH GASEOUS FUELS PRIOR TO BURNING

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Sep. 26, 1977, Ser. No. 836,380

Int. Cl.[2] F23C 7/00

U.S. Cl. 431—187 **4 Claims**



1. In an improved gaseous fuel burner system for minimizing the production of NOx, comprising;

(a) a primary burner comprising a burner tube, and a primary burner head connected thereto, said burner head comprising a central plenum at the distal end of said burner tube, with a plurality of substantially radial pipes equally spaced around said plenum, said pipes closed at their ends, and having a plurality of primary burner ports directed outwardly and downstream thereof, a cylindrical opening in a wall, into which said burner is positioned;

(b) means to supply a mixture of said gaseous fuel and primary combustion air to and through said burner tube, to said burner head;

(c) means to supply secondary combustion air into said opening around said tube, moving downstreamwardly to said primary burner and through the open space remaining between said radial pipes, the improvement comprising;

(d) secondary burner ports in said radial pipes upstream of said primary burner ports, furnished with gaseous fuel and primary air from inside said burner tube, baffle plates positioned upstream and opposite of said secondary ports, whereby a portion of said gaseous fuel and primary air from inside said burner tube is directed through said secondary ports against said baffle and outwardly into the flow zone of said secondary air for burning upstream of said primary burner;

whereby the products of combustion of said secondary burner ports are carried by said flow of secondary air downstream into the combustion zone of said primary burner.

4,157,891

FUEL FLOW ADJUSTING DEVICE FOR USE IN GAS-FUELED LIGHTERS

Nobuyoshi Moriya, Omiya, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Saitama, Japan

Division of Ser. No. 610,081, Sep. 3, 1975, Pat. No. 4,080,156. This application Jan. 17, 1977, Ser. No. 759,641

Claims priority, application Japan, Sep. 4, 1974, 49/106178[U]

Int. Cl.[2] F23Q 2/42

U.S. Cl. 431—344 **17 Claims**

1. A fuel flow adjusting device for use in a gas-fueled lighter comprising:

a fuel tank having upper and lower walls;

an outer cylindrical body fixedly secured to said upper and lower walls of said fuel tank and having an axially-hollow

interior, said outer cylindrical body having a transverse opening adapted to make a fuel communication between said fuel tank and said axially-hollow interior of said outer cylindrical body;

a top plate, provided on said outer cylindrical body, having a bore through the center thereof;

a fuel discharge nozzle moveably mounted on the upper portion of said outer cylindrical body;

a spring for controlling the movement of said fuel discharge nozzle;

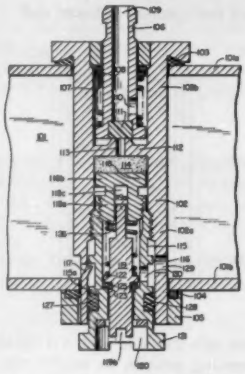
a resilient member positioned within said outer cylindrical body for covering said bore of said top plate to control the fuel communication between said fuel discharge nozzle and said fuel tank;

an adjusting wad positioned under said top plate within said axially-hollow interior of said outer cylindrical body to control the fuel supply to said fuel discharge nozzle;

a first fuel flow adjusting means for coarsely adjusting the flow of fuel through said nozzle rotatably positioned within said axially hollow interior of said outer cylindrical body in threaded engagement therewith and having a lower end extending beyond said outer cylindrical body to define an opening therein, said first fuel flow adjusting means including a shoulder formed in the lower part thereof and being provided with a passage opening adapted to introduce fuel gas into said fuel tank;

a second fuel flow adjusting means for finely adjusting the flow of fuel through said nozzle rotatably positioned within said first fuel flow adjusting means in threaded engagement therewith, said second fuel flow adjustment means including a pressure head mounted on said first fuel flow adjusting means in rotatably engagement hterewith, said pressure head being arranged to contact with said adjusting wad for applying pressure variation on the latter;

said second fuel flow adjusting means further including a central axle telescopically positioned within said first fuel flow adjusting means in rotation-transmissive engagement with said pressure head, a lower end of said central axle extending into said opening of said first fuel flow adjusting means, wherein said pressure head has a groove on the lower side thereof and wherein said central axle operatively engages said groove of said pressure head at its upper end;



a spring arranged in engagement with said pressure head and said central axle so as to apply downward pressure on said central axle;

a first sealing member interposed between said outer cylindrical body and said first fuel flow adjusting means; and

a second sealing member arranged on said central axle to form a sealing contact with said shoulder under the action of said spring.

4,157,892

METHOD OF COLORING WATER-ABSORBABLE PLASTICS AND COLORED WATER-ABSORBABLE PLASTICS

Kyoichi Tanaka; Takeshi Mio; Kozo Takahashi, and Toshiharu Yoshikawa, all of Nagoya, Japan, assignors to Toyo Contact Lens Company, Limited, Nagoya, Japan

Continuation of Ser. No. 443,948, Feb. 20, 1974, abandoned. This application Oct. 12, 1976, Ser. No. 731,572

Claims priority, application Japan, Feb. 21, 1973, 48/21470

Int. Cl.[2] B29D *11/00*; D06P *3/00*; G02C *7/04*

U.S. Cl. 8—14 26 Claims

1. A method of making a colored water-absorbable soft contact lens comprising

(a) preparing a water-absorbable soft contact lens substantially composed of a material selected from the group consisting of

(i) a product of copolymerization between a coupler having a polymerization radical and a water-absorbable plastic monomer capable of forming a water-absorbable soft contact lens;

(ii) a product of polymerization between a coupler having a polymerization radical and a polymer of a water-absorbable plastic monomer capable of forming a water-absorbable soft contact lens; and

(iii) a product of polymerization between a polymer of a coupler having a polymerization radical and a water-absorbable plastic monomer capable of forming a water-absorbable soft contact lens;

said water-absorbable plastic monomer being a member selected from the group consisting of 2-hydroxyethylmethacrylate, 2-hydroxypropylmethacrylate, 2-hydroxyethylacrylate, N-methylolacrylamide, methacrylic acid, acrylic acid, N-vinyl pyrrolidone, acrylamide and vinyl acetate which is changed into a water-absorbable vinyl alcohol by hydrolysis after polymerization, and

(b) immersing said water-absorbable soft contact lens in an aqueous solution of a diazonium double salt having a pH value which is suitable for causing coupling reaction to form a azoic dye within said contact lens.

4,157,893

UNIFORMLY DYED WATER-SWELLABLE CELLULOSIC FIBERS

Johannes Dehnert, Ludwigshafen, and Guenter Dunkelmann, Hassloch, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

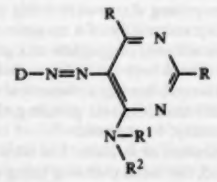
Filed Apr. 7, 1978, Ser. No. 894,617

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715984

Int. Cl.[2] C09B *27/00*

U.S. Cl. 8—41 R 8 Claims

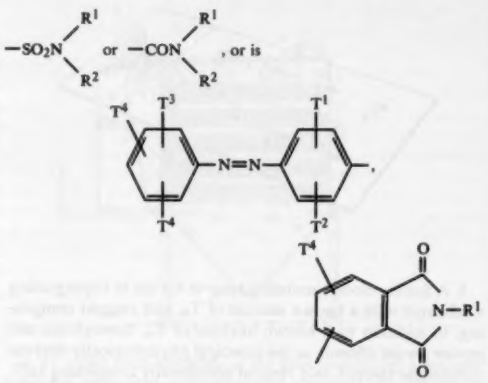
1. Uniformly dyed water-swellable cellulosic fibers, said fibers being fast to washing, dry cleaning, sublimation and light, and having been produced by contacting water-swellable cellulose fibers sequentially or concomitantly with water, ethylene glycol or a derivative thereof and, while the fibers are still swollen with an essentially water-insoluble dye of the formula



in which one R is R^1, or

the other R is

D is phenyl which is substituted by cyano, trifluoromethyl,



or D is anthraquinonyl which is unsubstituted or substituted by methyl;

R^1 is hydrogen, alkyl or 1 to 8 carbon atoms, alkyl of 2 to 8 carbon atoms which is substituted by hydroxyl, alkoxy of 1 to 8 carbon atoms, benzyloxy or β-phenylethoxy; phenylakyl (where alkyl is of 1 to 4 carbon atoms), tolylalkyl (where alkyl is of 1 to 4 carbon atoms), phenyl, which is unsubstituted or substituted by methyl, ethyl or R^1 is $(CH_2)_3OC_2H_4C_6H_5$;

R^2 is hydrogen, alkyl of 1 to 8 carbon atoms, or alkyl of 2 to 9 carbon atoms substituted by hydroxyl or alkoxy of 1 to 8 carbon atoms,

T^1 is hydrogen, chlorine, bromine, methyl, methoxy or ethoxy,

T^2 is hydrogen, methyl, methoxy or ethoxy,

T^3 is hydrogen, methyl, chlorine, bromine, nitro,

T^4 is hydrogen, chlorine or bromine and

T^5 is hydrogen, methyl or ethyl.

4,157,894

PRODUCTION AND ANALYSIS OF GINSENG ROOT EXTRACT

Ezio Bombardelli, Milan, Italy, assignor to Inverni della Beffa S.p.A., Milan, Italy

Filed May 27, 1977, Ser. No. 801,398

Claims priority, application United Kingdom, Jun. 3, 1976, 23021/76

Int. Cl.[2] G01N *31/08*; C07J *17/00*

U.S. Cl. 23—230 R 7 Claims

1. A method for producing a purified extract of ginseng root which comprises contacting an aqueous extract of ginseng root with a solid absorption resin comprising an aromatic polymer selected from the group consisting of polystyrene and phenol-formaldehyde resins so as to absorb active saponins contained in the extract on the resin and eluting active saponins from the resin.

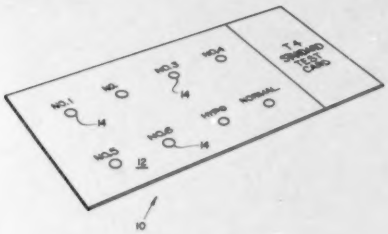
5. A method of analysing a ginseng extract which comprises subjecting the extract to silylation to convert non-hydrolysed saponins selected from the group consisting of ginsenosides Rb_1, Rb_2, Rc, Rd, Re, Rf and Rg_1 contained in the extract to trimethylsilyl ethers, separating the ethers by gas-liquid chromotography and detecting the separated ethers.

4,157,895

RIA REAGENTS AND PROCESSES

Carole A. Finlay, Woburn, and Marvin Mitchell, Watertown, both of Mass., assignors to Nuclear International Corporation, Waltham, Mass.

Filed Oct. 7, 1977, Ser. No. 840,133
Int. Cl.[2] C09K 3/00; G01N 33/16
U.S. Cl. 23—230 B **9 Claims**



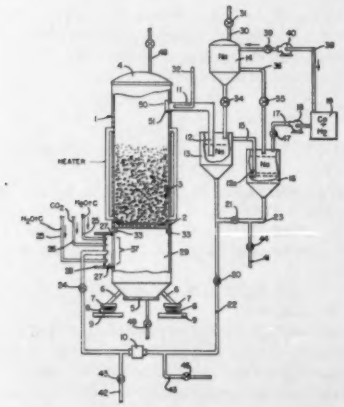
1. A human blood simulating reagent for use in impregnating a substrate with a known amount of T_4, said reagent comprising, in addition to a known amount of T_4, hemoglobin and bovine serum albumin as the principal physiologically-derived component thereof, said reagent additionally comprising sufficiently wetting agent to provide means effective to render a paper substrate impregnated with said reagents readily wettable of said reagent.

4,157,896

APPARATUS FOR THE PRODUCTION OF CARBON MONOXIDE AND HYDROGEN

Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Research Incorporated, Cleveland, Ohio

Division of Ser. No. 702,003, Jul. 2, 1976, Pat. No. 4,074,980. This application Sep. 29, 1977, Ser. No. 838,012
Int. Cl.[2] C10J 3/48, 3/56
U.S. Cl. 48—62 R **6 Claims**



1. A reactor for producing at least one gas selected from the group consisting of H_2, CO and mixtures thereof by oxidation of an alkali metal and subsequent reduction of the oxidized alkali metal, said reactor comprising in combination:

a vertical reaction vessel (1) mounted on a foundation;

a horizontally disposed foraminous means (2) in said vessel separating the interior of the vessel into a first reaction zone below said foraminous means and a second reaction zone above said foraminous means and adjacent to said first reaction zone;

a fluidizable bed (3) of light weight iron balls supporting particulate material selected from the group consisting of metallic iron, nickel, cobalt, manganese, oxides of said metals, alloys of said metals and mixtures of said metals, their oxides and their alloys, in said reaction vessel, supported within said reaction zone by said foraminous means;

means (10) for spraying a stream of molten alkali metal into said first reaction zone;

means (25) for introducing a stream of finely divided carbon and oxidant into said first reaction zone;

means (37) for mingling said fluid stream of oxidant and carbon with said stream of alkali metal in said first reaction zone, to effect oxidation of said alkali metal;

an outlet conduit (11) connected to the second reaction zone in said reaction vessel;

means (18) for maintaining a reduced subatmosphere pressure in said outlet conduit whereby the materials sprayed into said first reaction zone and their reaction products are caused to flow into said second reaction zone and through said fluidizable bed;

heating means associated with said vessel for maintaining the said zones in said reaction vessel at an elevated temperature; and

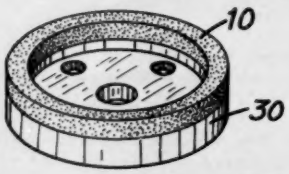
means (13) communicating with said outlet conduit to separately recover the reaction products issuing through said outlet conduit.

4,157,897

CERAMIC BONDED GRINDING TOOLS WITH GRAPHITE IN THE BOND

Paul P. Keat, Holden, Mass., assignor to Norton Company, Worester, Mass.

Continuation of Ser. No. 787,464, Apr. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 671,943, Mar. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 255,559, May 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 876,707, Nov. 14, 1969, abandoned. This application Feb. 21, 1978, Ser. No. 879,654
Int. Cl.[2] B24D 3/14, 7/06
U.S. Cl. 51—295 **9 Claims**



1. A bonded abrasive grinding element consisting of abrasive grains distributed in a continuous ceramic bonding matrix said abrasive grains comprising diamond or cubic boron nitride and said bond consisting essentially of a ceramic matrix including from 10 to 53%, by volume, of graphite or a graphite substitute selected from hexagonal boron nitride, or molybdenum, disulfide or mixtures thereof, having a numerical average particle size of less than 200 microns, said grinding element including less than 10% porosity, by volume.

8. A grinding element as in claim 1 in which the abrasive is metal clad diamond, the metal cladding being selected from the group consisting of copper, silver, nickel, cobalt, molybdenum, and alloys thereof, the graphite has a particle size of from 1 to

10 microns and is flaky in form, the volume of porosity is below 10%, and the diamond volume is from 5 to 40%, of the total element volume.

4,157,898

FUSED ALUMINUM OXIDE ABRASIVE GRAIN CONTAINING REDUCED TITANIUM OXIDE

Thomas B. Walker, Lewiston; Robert J. Seider, Ransomville, and Paul Cichy, Buffalo, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 691,817, Jun. 1, 1976, Pat. No. 4,111,668. This application Apr. 14, 1978, Ser. No. 896,269

Int. Cl.[2] C09K *3/14*; B24D *11/00*

U.S. Cl. 51—309 **9 Claims**

1. A fused abrasive grain which is bluish black in color consisting essentially of:

(1) titanium oxide containing from about 0.42 to about 0.84% titanium, by weight of the abrasive grain, said titanium being present as a reduced titanium oxide having an average oxidation state lower than in Ti_2O_3;

(2) from about 0.05 to about 0.3% by weight carbon;

(3) from about 0.02 to about 0.1% by weight Na_2O;

(4) from 0 to about 0.1% by weight total of calcium and silicon oxides; and

(5) alumina; said abrasive having a gain on ignition in air before roasting at 1300° C., when of a size of about 147 microns and finer, of from about 0.4 to about 0.7% by weight.

4,157,899

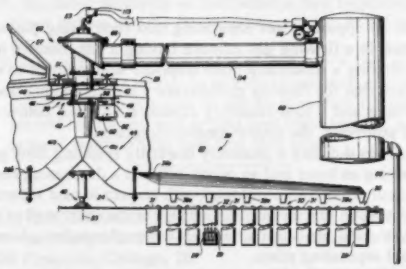
PULSED BACKFLUSH AIR FILTER

Bruce M. Wheaton, Excelsior, Minn., assignor to CEA Carter-Day Company, Minneapolis, Minn.

Filed Oct. 11, 1977, Ser. No. 840,820

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—273 **12 Claims**



1. A gas filter apparatus having a housing body including a dusty gas section with an inlet thereto and a clean gas section with an outlet therefrom, the improvement comprising:

(a) a porting plate mounted in said body separating the dusty gas section from the clean gas section and having a plurality of concentric rings of ports in said porting plate which are circularly-spaced thereon at approximately uniform pitch, each port in a ring having a filter media sleeve depending therefrom;

(b) a means mounted on said body for generating pulses of backflushing gas from a single source at a predetermined frequency having an outlet therefrom; and

(c) a rotary backflushing gas pulse distributing means extending radially across and spaced above the concentric rings of ports in said porting plate within the clean gas section having an inlet in fluid communication with the outlet of said backflushing gas pulse generator means and a plurality of radially-spaced orifices therefrom, each of said orifices being spaced to rotationally traverse over and successively fluid communicate with each of the ports in a like radially spaced concentric ring;

whereby each port in each ring successively registers with the corresponding orifice in the backflushing gas pulse distributing means as it rotates over the port plate at a frequency which is not an even multiple of the pulse generating frequency of said pulse generator means.

4,157,900

TUBE FILTERS

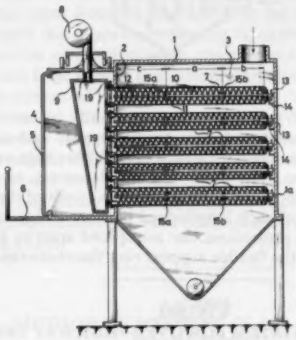
Adolf Margraf, Am Schleplingsbach 46, D-3060 Stadthagen Wendthagen, Fed. Rep. of Germany

Filed Jun. 3, 1977, Ser. No. 803,136

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625753; Sep. 16, 1976, 2641629

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—294 **8 Claims**



1. In a tube filter assembly of the kind comprising a housing having a perforated wall presenting openings and defining a dirty gas chamber with a raw gas inlet and a clean gas chamber with a clean gas outlet, said dirty gas chamber containing filter tubes each having an open end connected to a related one of the wall openings in a sealed fashion with respect to said wall openings and arranged to be cleaned periodically by countercurrent scavenging from the clean gas side, said filter tubes each having a closed end, the improvement comprising: each said filter tube has passing through it a rigid support bar which is detachably connected at one end to a fixed part of said housing by means comprising a part which projects through the closed end of said tube, and at least one coil spring supported by said support bar, said at least one coil spring being connected to said support bar at a distance from said perforated wall and having its end adjacent the clean gas chamber connected, under tensile stress, to a perforated clamping flange situated on the clean gas chamber, between which flange and said perforated wall the rim of the opening in the related filter tube is clampable.

4,157,901

FILTER BAG ASSEMBLY INCLUDING A VENTURI-CAGE ASSEMBLY

Eugene D. Schaltenbrand, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

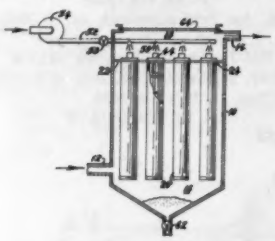
Filed Apr. 7, 1978, Ser. No. 894,293

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—302 **1 Claim**

1. Apparatus for filtering entrained particulate matter from a gas stream including a housing having an inlet for dust bearing gas and an outlet for clean gas, an apertured tube sheet intermediate said inlet and outlet defining inlet and outlet compartments, a series of porous filter bags depending from said tube sheet, each of said filter bags having a closed end thereof extending into the inlet compartment and an open end thereof extending through an aperture of said tube sheet, a support ring attached to the open end of each of said filter bags, and being concentric with respect to an aperture of said tube sheet, a

source of pressurized cleaning fluid, nozzle means exhausting the cleaning fluid into the open end of each filter bag, a support cage in each filter bag comprising a longitudinal tubular framework of spaced resilient members, a tubular aspirator intermediate the nozzle means and each of said filter bags, and positioned to receive the cleaning fluid exhausting from said nozzle means, a plurality of supports contiguous with the resilient



members of said frame and extending radially inward therefrom to radially abut said aspirator to support said tubular aspirator concentrically within each of said filter bags so as to maintain maximum flow from said nozzle means to effect maximum removal of dust particles from the walls of the filter bags, and an end of each longitudinal member including first and second radial projections that are spaced apart to form a saddle that holds the flexible support ring therebetween.

4,157,902

AIR CLEANER SYSTEM FOR OVER-HIGHWAY TRUCKS

Joseph C. Tokar, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 718,092, Aug. 26, 1976, abandoned, which is a continuation of Ser. No. 615,771, Sep. 22, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,096

Int. Cl.[2] **B01D** *50/00;* **B60J** *13/02*

U.S. Cl. 55—385 B **13 Claims**

1. Air induction apparatus for the air intake of the engine of an over-the-road vehicle comprising, in combination:

(a) an inlet fitting mounted on the vehicle and having a forwardly directed opening which allows air to flow therethrough;

(b) and a conduit connecting said fitting to the air intake of the engine, and including in succession a readily replaceable cleaning element assembly and air outlet means;

(c) said cleaning element assembly comprising an outer housing of uniform diameter, a hollow, conical, air-permeable member within said housing having a first end engaging the inner surface of said housing and a second end spaced inwardly from said housing, positioning means centering said second end of said member in one end of said housing and providing free annular access with the outer surface of said member, filter means positioned and arranged with respect to said member for filtering air passing therethrough, and further means sealing said first end of said member in the other end of said housing while providing free circular access with the inside surface of said member;

(d) and said outlet means defining a passageway having an inlet and an outlet and increasing in cross-sectional area from its inlet to its outlet, to receive clean air discharged from said member and conduct it to said air intake.

4,157,903

SEPARATION AND RECOVERY APPARATUS FOR SOLID OR LIQUID PARTICLES ENTRAINED IN A FLOWING GAS MIXTURE

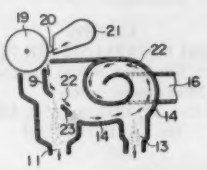
Masao Kanda, and Hiroaki Nakamura, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 6, 1978, Ser. No. 893,862

Claims priority, application Japan, Apr. 11, 1977, 52/41080

Int. Cl.[2] **B01D** *45/16;* **B05C** *11/10*

U.S. Cl. 55—393 **3 Claims**



1. In an apparatus for separating and recovering particles entrained in a flowing gas mixture having a gas mixture inlet and including a separating plate disposed with respect to said inlet such that the flowing gas mixture is directed along one of its surfaces and a first recovery chamber disposed below the end of said plate, the improvement comprising:

(a) means defining a generally inwardly spiraling flow path having an inner and an outer wall and a decreasing radius of curvature and positioned with respect to said separator plate such that an entrance surface of the outer wall of said flow path lies substantially in the prolongation plane of said separating plate,

(b) at least one further recovery chamber means disposed in an intermediate position in said flow path defining means, and

(c) exhaust duct means coupled to the terminus of said flow path defining means.

4,157,904

HYDROCARBON GAS PROCESSING

Roy E. Campbell, and John D. Wilkinson, both of Midland, Tex., assignors to The Ortloff Corporation, Midland, Tex.

Continuation-in-part of Ser. No. 728,963, Oct. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 712,771, Aug. 9, 1976, abandoned. This application Oct. 18, 1977, Ser. No. 843,321

Int. Cl.[2] **F25J** *3/02*

U.S. Cl. 62—27 **32 Claims**

1. In a process for separation of a feed gas into a volatile residue gas and a relatively less volatile fraction, said feed gas containing hydrocarbons, methane and ethane together comprising a major portion of said feed gas, wherein

(a) said feed gas under pressure is cooled sufficiently to

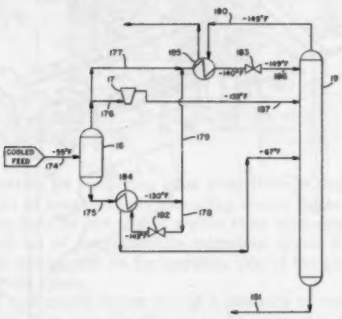
partially condense said gas forming thereby a liquid portion of said feed gas and a vapor feed gas;

(b) at least some of the liquid portion is expanded in an expansion means to a lower pressure whereby a part of said liquid portion vaporizes to cool the expanded liquid portion to a refrigerated temperature; and

(c) at least some of the expanded liquid portion is subsequently treated in a fractionation column to separate said relatively less volatile fraction;

the improvement comprising

(1) combining at least part of liquid portion (a) with a process stream having a bubble point below the bubble point of said liquid portion (a), to form thereby a combined stream;



(2) supplying said combined stream to said expansion means at a temperature which is below the bubble point of said liquid portion (a);

(3) expanding said combined stream to said lower pressure, whereby the refrigerated temperature achieved in expansion step (b) is reduced;

(4) thereafter supplying at least some of said expanded combined stream to said fractionation column at a first feed position; and

(5) expanding at least a portion of said vapor feed gas in a work expansion engine to said lower pressure, and supplying the expanded vapor to the fractionation column at a second feed point, said second feed point being at a lower column position than said first feed point.

4,157,905

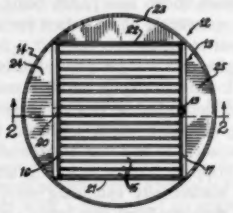
HEAT-EXCHANGER TRAYS AND SYSTEM USING SAME

Robert J. Hengstebeck, Valparaiso, Ind., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 415,524, Nov. 14, 1973, Pat. No. 3,969,450. This application May 24, 1976, Ser. No. 689,265

Int. Cl.² F25J 3/06

U.S. Cl. 62—34 **23 Claims**



11. A process for the cryogenic demethanization of a feed containing methane and primarily ethylene and ethane obtained by the pyrolytic cracking of a light hydrocarbon, which comprises:

introducing said feed into a vertical distillation chamber at a location between the upper rectifying section and the lower stripping section of the distillation chamber;

supporting a number of pools of liquid from the feed at various levels in one of said sections of the distillation chamber, with the support at each level being provided primarily at a number of spaced elongated horizontal zones by a set of spaced horizontal chambers and with the sets of horizontal chambers at the various levels being interconnected at alternating ends;

passing a fluid seriatim through the interconnected sets of horizontal chambers so that the fluid passes in opposite directions through adjacent sets of horizontal chambers and so that, for each level, there is a number of horizontal paths of travel of fluid in the same general direction through a set of the horizontal chambers with the fluid being in indirect heat exchange relationship with up-flowing vapor from the feed and with the supported pool of liquid that is generally flowing downwardly through that section of the distillation chamber and with the fluid at each level passing in a direction transverse to the general directions of flow of the vapor and the liquid from the feed;

removing from the top part of said distillation chamber overhead vapor containing a greater content of methane that said feed; and

removing from the bottom part of said distillation chamber liquid containing a lesser concentration of methane than in said feed.

4,157,906

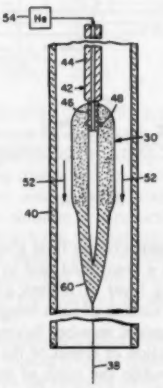
METHOD OF DRAWING GLASS OPTICAL WAVEGUIDES

Alan C. Bailey, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,154

Int. Cl.² C03B 37/00

U.S. Cl. 65—3 A **15 Claims**



1. A method of forming a high purity glass filament comprising the steps of

providing a substantially cylindrical mandrel,

applying a first coating of glass soot to the outside peripheral surface of said mandrel,

removing said mandrel to form a soot preform having an aperture therein,

heating said preform to a sufficiently high temperature for a sufficient period of time to permit the soot at at least one end thereof to consolidate, and simultaneously

drawing the consolidated portion of said preform to reduce the cross-sectional area thereof and close said aperture, thereby forming an optical waveguide filament.

4,157,907

METHOD OF PRODUCING A MOULDABLE MATERIAL HAVING A HIGH CONTENT OF A CRYSTALLIZABLE GLASS

Karl K. K. Krøyer, Engtoften 3, DK-8260 Viby J., Denmark

Filed Jan. 13, 1977, Ser. No. 759,226
Claims priority, application Denmark, Jan. 20, 1976, 212/76
Int. Cl.[2] C03C *17/32*
U.S. Cl. 65—33 12 Claims

1. Method of producing a mouldable material in the form of coated glass particles, comprising the steps of

(a) producing a glass melt in a rotary kiln,

(b) removing said glass melt from the kiln to form a crystallizable glass,

(c) grinding the glass in a ball mill to a desired particle size, and

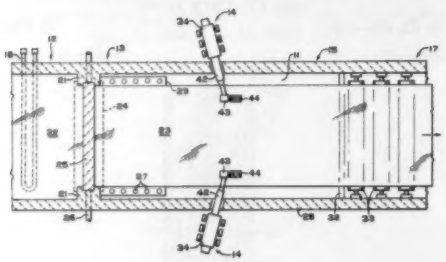
(d) adding a thermosetting organic resin binder to the glass during the grinding procedure to form a coating on said glass particles wherein the amount of crystallizable glass constituted from 50% or more by weight, based on the total weight of glass and binder.

4,157,908

METHOD AND APPARATUS FOR THICKNESS CONTROL OF FLOAT GLASS WITH TOOTHED CYLINDRICAL MEMBER THAT HAS AXIS EXTENDED IN THE DIRECTION OF GLASS FLOW

Robert Gagne, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 1, 1978, Ser. No. 939,142
Int. Cl.[2] C03B *18/02*
U.S. Cl. 65—99 A 22 Claims



1. A method of manufacturing float glass comprising delivering molten glass at a controlled rate to molten metal bath, forming an advancing layer of molten glass in ribbon form, contacting the upper surface of each margin of the glass layer with a cylindrical toothed member having its axis extending generally in the direction of travel of the glass, rotating said cylindrical member while the teeth of said member contact said molten glass to form the glass to other than equilibrium thickness.

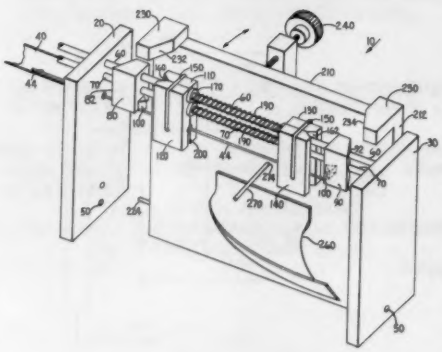
8. Apparatus for achieving other than equilibrium thickness of glass in a float glass process comprising a tank structure holding a bath of molten for supporting a molten glass layer as it is advanced along the surface of the molten metal, an elongated member extending over said bath of molten metal, thickness control means mounted on said elongated member providing means for applying force onto said molten glass layer wherein said thickness control means comprises a generally cylindrical member having its axis held generally parallel to a plane normal to the glass surface and extending in the direction of glass flow and having a surface of teeth and means to rotate said cylindrical member about its axis.

4,157,909

APPARATUS FOR FORMING MERCURY-FILLED CAPILLARY TUBES

Adam Kachidurian, Newton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 27, 1978, Ser. No. 900,422
Int. Cl.[2] C03B *23/00, 23/04*
U.S. Cl. 65—269 7 Claims



1. Glass capsule-forming apparatus comprising

horizontally extending shaft support means,

two pairs of gripping blocks mounted on said shaft means, each pair including two parallel, vertically oriented blocks having said shaft means disposed between them and with spring means clamping the two blocks of each pair together,

first wedges slidably mounted on said shaft means adjacent to each pair of gripping blocks for separating the individual blocks of each pair of gripping blocks from each other,

said first wedges each being slidable, on said shaft means, toward and away from an adjacent pair of gripping blocks, the movement of a wedge toward and into engagement with a pair of gripping blocks serving to spread apart the individual blocks of the pair, the movement of a wedge away from the adjacent pair of gripping blocks serving to permit the individual blocks of the pair to come together,

a pair of vertically extending spaced-apart plates supporting said shaft means, said pairs of gripping blocks and said wedges between them, said plates being pivotable forwardly and rearwardly about a first horizontal axis disposed adjacent to their lower ends,

means carrying second wedges positioned behind said first wedges and located to engage said first wedges and drive them toward their adjacent pair of gripping blocks, said means being pivotable about a second horizontal axis positioned adjacent to said first horizontal axis,

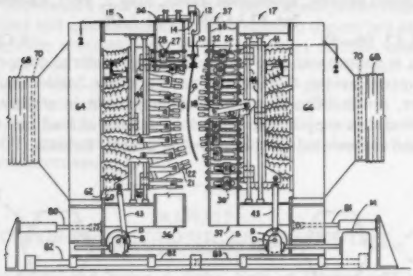
said pairs of gripping blocks including aligned slots for receiving a horizontally extending mercury-filled tube from which mercury-filled capillaries are to be formed, and

heating means disposed adjacent to one of said pairs of gripping blocks and positioned to direct heat onto said mercury-filled tube when said tube is moved back and forth with respect to said heating means.

4,157,910
APPARATUS FOR TEMPERING FLAT OR CURVED GLASS SHEETS

Vaughn R. Imler, Valencia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1978, Ser. No. 871,873
Int. Cl.[2] C03B *27/00*
U.S. Cl. 65—351 5 Claims



1. Apparatus for tempering glass sheets, comprising:
a first set of longitudinally extending nozzle boxes arrayed side-by-side on one side of a glass sheet receiving space;
a second set of longitudinally extending nozzle boxes arrayed side-by-side on the opposite side of the glass sheet receiving space;
each of said nozzle boxes having a plurality of nozzles extending from one side thereof in the transverse direction toward the glass sheet receiving space, each of said nozzles communicating with the interior of the respective nozzle box which is, in turn, in communication with a source of pressurized tempering fluid so as to direct streams of tempering fluid through the nozzles toward the glass sheet receiving space;
each nozzle box being pivotably connected to bearing means so as to permit each nozzle box to pivot about a longitudinally extending axis;
each bearing means being supported on end frame means with means to adjust the location of each bearing means in the transverse direction relative to said frame means so as to permit independent adjustment of the spacing between each nozzle box and the surface of a glass sheet within the glass sheet receiving space;
lever arm means extending generally in the transverse direction associated with each nozzle box, one end of each lever arm being provided with clamp means for adjustably affixing the angular relationship between the respective nozzle box and its associated lever arm, the opposite end of each lever arm being connected to means for oscillating the lever arms so as to oscillate each of the nozzle boxes about its said longitudinal pivot axis.

4,157,911
DECARBONIZATION OF AMMONIUM POLYPHOSPHATE FERTILIZER SOLUTIONS

James F. Murphy, Danville, and Elias A. Woycheshin, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

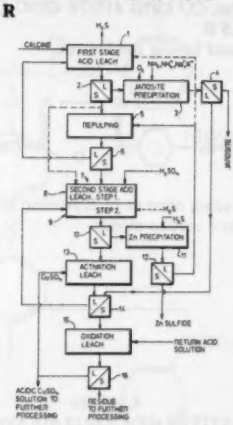
Filed Oct. 30, 1978, Ser. No. 955,730
Int. Cl.[2] C05B *1/06, 11/10*
U.S. Cl. 71—34 7 Claims

1. In the process of removing carbonaceous impurities from aqueous ammonium polyphosphate fertilizer solutions by treating the solutions with a mixture of an organic amine and a quaternary ammonium salt or with a water-immiscible hydrocarbon, the improvement which comprises sequentially applying to the impure ammonium polyphosphate solution a mixture of an organic amine and a quaternary ammonium salt, followed by the addition of a water-immiscible hydrocarbon, wherein the organic amine-quaternary ammonium salt mixture is fully dispersed at high shear in the solution and then the water-immiscible hydrocarbon is added to the solution at a low rate of shear, and then agitation of the treated fertilizer solution is continued at a low rate of agitation and essentially no shear until the formation of an essentially carbonaceous impurity-free aqueous phase and an organic phase separated from the aqueous phase by a distinct interface and containing substantially all of the carbonaceous impurities, separating the phases and recovering an aqueous purified ammonium polyphosphate fertilizer solution.

4,157,912
PROCESS FOR RECOVERY OF COPPER AND ZINC FROM COMPLEX SULPHIDES

Donald R. Weir, Fort Saskatchewan; Godefridus M. Swinkels; Ernest G. Parker, both of Rossland; Eva A. Vosahlo, Fort Saskatchewan, and Roman M. Genik-Sas-Berezowsky, Edmonton, all of Canada, assignors to Cominco Ltd., Trail and Sherrit Gordon Mines Limited, Toronto, both of, Canada

Filed Aug. 14, 1978, Ser. No. 933,372
Claims priority, application Canada Aug. 19, 1977, 285127
Int. Cl.[2] C22B *15/12, 19/22*
U.S. Cl. 75—101 R 16 Claims



1. A process for treating thermally activated metal sulfides containing iron and non-ferrous metals including copper and zinc by countercurrently acid leaching activated sulfides in two stages, removing iron in an iron removal as jarosite with formation of sulfuric acid, treating acid leach residue with acidic copper sulfate solution to form activated simple copper sulfides in an activation leach, precipitating zinc as zinc sulfide, subjecting activated simple copper sulfides to an oxidation pressure leach and subjecting purified resulting copper sulfate solution to treatment for recovery of copper, which process comprises the steps of:
(a) subjecting thermally activated metal sulfides to a first-stage acid leach in acid solution containing sulfuric acid in a concentration in the range of 60 to 130 g/l and not more than 5 g/l zinc to form ferrous sulfate solution and solids,
(b) subjecting solids obtained from said first-stage acid leach to a second-stage acid leach in a first step and a second step, said first step consisting of leaching said solids in a slurry with sulfuric acid added in an amount sufficient to give an acid concentration in the range of 200 to 300 g/l H_2SO_4, diluting said slurry in said second step by mixing said slurry with generated sulfuric acid solution formed in said iron removal and iron and zinc-containing solution obtained from said activation leach,
(c) precipitating any copper present in solution in said second step of said second-stage acid leach,
(d) separating essentially copper-free solution from the diluted slurry,
(e) precipitating substantially pure zinc sulfide from said

copper-free solution with H_2S at a partial pressure of H_2S of at least 500 kPa and at a temperature of at least 80° C.,
(f) separating zinc sulfide from acid solution, and
(g) returning said acid solution to the first-stage acid leach.

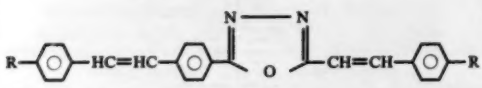
4,157,913

DERIVATIVES OF 1,3,4-OXADIAZOLE AND ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING SAME

Mitsuo Okazaki, Tama; Akihiro Yamaguchi, Yokohama, and Masaomi Sasaki, Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 784,618, Apr. 4, 1977, Pat. No. 4,088,484. This application Dec. 22, 1977, Ser. No. 863,130
Claims priority, application Japan, Apr. 12, 1976, 51-40374
Int. Cl.² C07D 413/14; G03G 5/04
U.S. Cl. 96—1.5 R **16 Claims**

1. A compound having the formula



wherein R is cyano, nitro or dialkylamino in which said alkyl has from one to 4 carbon atoms.

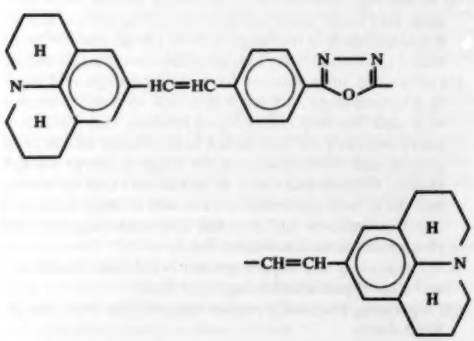
4,157,914

DERIVATIVES OF 1,3,4-OXADIAZOLE AND ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING SAME

Mitsuo Okazaki, Tama; Akihiro Yamaguchi, Yokohama, and Masaomi Sasaki, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 784,618, Apr. 4, 1977, Pat. No. 4,088,474. This application Dec. 22, 1977, Ser. No. 863,129
Claims priority, application Japan, Apr. 12, 1976, 51-40374
Int. Cl.² C07D 413/14; G03G 5/04
U.S. Cl. 96—1.5 R **7 Claims**

1. A compound having the formula



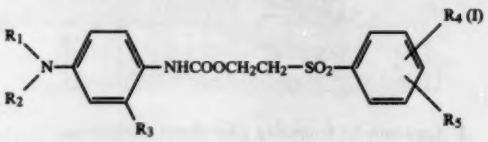
4,157,915

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING DEVELOPMENT PRECURSOR

Tsutomu Hamaoka; Junkichi Ogawa, and Isao Shimamura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 2, 1978, Ser. No. 902,139
Claims priority, application Japan, May 2, 1977, 52-50909
Int. Cl.² G03C 7/00, 1/06
U.S. Cl. 96—55 **6 Claims**

1. A color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, a non-diffusible color coupler present in at least one layer on the support and a layer containing at least one compound represented by the following general formula (I)



wherein R_1 is an alkyl group having 1 to 5 carbon atoms, a hydroxyalkyl group having 1 to 5 carbon atoms, an alkoxyalkyl group having 2 to 10 total carbon atoms or an alkylsulfonamidoalkyl group having 2 to 10 total carbon atoms; R_2 represents an alkyl group having 1 to 5 carbon atoms, a hydroxyalkyl group having 1 to 5 carbon atoms, an alkoxyalkyl group having 2 to 10 total carbon atoms or an alkylsulfonamidoalkyl group having 2 to 10 total carbon atoms; R_3 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or an alkoxyalkyl group having 2 to 5 total carbon atoms; R_4 represents a hydrogen atom, a halogen atom, a carboxyl group, a sulfo group, a nitro group, a carboxylic acid ester group having 2 to 5 total carbon atoms, an alkyl group having 1 to 5 carbon atoms or an alkoxyalkyl group having 2 to 5 total carbon atoms; and R_5 represents a hydrogen atom, a halogen atom, a carboxyl group, a sulfo group, a nitro group, a carboxylic acid ester group having 2 to 5 total carbon atoms, an alkyl group having 1 to 5 carbon atoms or an alkoxyalkyl group having 2 to 5 total carbon atoms.

4,157,916

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Mitsugu Tanaka; Toshiaki Aono, and Takeshi Hirose, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 13, 1977, Ser. No. 815,407
Claims priority, application Japan, Jul. 13, 1976, 51-83363
Int. Cl.² G03C 7/00, 5/30, 1/76
U.S. Cl. 96—56.5 **16 Claims**

7. A photographic color developer solution containing a coupler compound represented by the following general formula (I):

(I)

wherein R represents

X represents

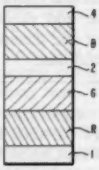
; R_1 and R_2 each represents an aliphatic group or an aromatic group; and Y represents a group capable of being released from the compound represented by the general formula (I) upon reaction with the oxidation product of a color developing agent to provide a compound which has a development inhibiting effect and a benzotriazole ring bonded to the carbon atom through the nitrogen atom at the 1-position thereof, said Y being selected from a 5- or 5-benzyloxybenzotriazole-1-yl group, a 5- or 6-octanamidobenzotriazole-1-yl group, a 5- or 6-(3-methylbenzothiazolinyliden)aminobenzotriazol-1-yl group, a 5- or 6-(3-ethylbenzothiazolinyliden)aminobenzotriazolyl group or a 5- or 6-(3-benzylbenzothiazolinyliden-)aminobenzotriazolyl group.

4,157,917

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hirozo Ueda, and Yasuo Aotsuka, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 12, 1974, Ser. No. 523,083
Claims priority, application Japan, Nov. 12, 1973, 48/127084
Int. Cl.[2] G03C *1/76, 3/00, 1/84*
U.S. Cl. 96—69 **18 Claims**



1. A color photographic light-sensitive material, which comprises a support having thereon at least a red-sensitive silver halide emulsion layer, two green-sensitive silver halide emulsion layers, a yellow filter layer and a blue-sensitive silver halide layer, in which the two green-sensitive layers comprise a first green-sensitive silver halide emulsion layer and a second green-sensitive silver halide emulsion layer and the relative positionwise relationship of each layer is in the order of the red-sensitive silver halide emulsion layer, the first green-sensitive silver halide emulsion layer, the yellow filter layer, the blue-sensitive silver halide emulsion layer and the second green-sensitive silver halide emulsion layer from the support.

4,157,918

LIGHT SENSITIVE FILM COMPOSITION

Stanley F. Wanat, Scotch Plains, and Oliver A. Barton, Florham Park, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Sep. 26, 1977, Ser. No. 836,345
Int. Cl.[2] G03C *1/52, 1/78*
U.S. Cl. 96—75 **12 Claims**

1. A proof sheet comprising a substantially transparent polymeric base sheet having a thin coating of a light sensitive composition adhered to a surface thereof, said light sensitive composition comprising a mixture of:

(a) a resinous binder;

(b) a colorant;

(c) a light sensitive diazo material; and

(d) an effective amount of an adhesion promoter, said adhesion promoter comprising a linear copolyester obtained by the esterification and subsequent polymerization of ethylene glycol with about 20 to 60 mol percent, based on the total amount of acids, of terephthalic acid, about 15 to 50 mol percent of isophthalic acid, and from about 10 to 65 mol percent of at least one acyclic dicarboxylic acid or acid ester selected from the group consisting of suberic, azelaic, sebacic, and adipic acids, and C_1 to C_7 alkyl esters of these acids, said adhesion promoter and said resinous binder being substantially compatible.

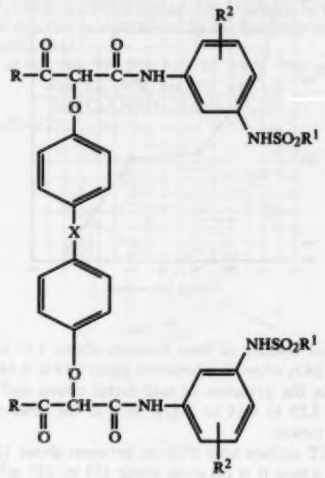
4,157,919

SILVER HALIDE EMULSIONS CONTAINING YELLOW-DYE-FORMING COUPLERS

Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,070
Int. Cl.[2] G03C *1/40*
U.S. Cl. 96—100 R **10 Claims**

1. A photographic element comprising a support bearing at least one layer of a photosensitive silver halide emulsion and a non-diffusible, yellow-dye-forming coupler having the structural formula:



where:

R is an aryl group of 6 to 12 carbon atoms, an aryloxyalkylene or arylthioalkylene group having 6 to 12 carbon atoms in the aryl portion of the group and 1 to 4 carbon atoms in the alkylene portion of the group, or an alkyl group of 1 to 8 carbon atoms;

R^1 is an alkyl group of 4 to 16 carbon atoms;

R^2 represents one or more halogen, lower alkyl, lower alkoxy, carboxy or lower alkoxycarbonyl substituents wherein the alkyl group and the alkyl portion of the alkoxy and alkoxycarbonyl groups contains 1 to 6 carbon atoms; and

X is sulfonyl, carbonyl or alkylenedisulfonamido containing 1 to 4 carbon atoms.

4,157,920

NOVEL PRECIPITATED SILICEOUS PRODUCTS AND METHODS FOR THEIR USE AND PRODUCTION

Satish K. Wason, and Robert K. Mays, both of Havre de Grace, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 557,707, Mar. 12, 1975. This application May 16, 1977, Ser. No. 797,271
Int. Cl.[2] C09K *3/00*; C08K *3/36*
U.S. Cl. 106—292 **1 Claim**

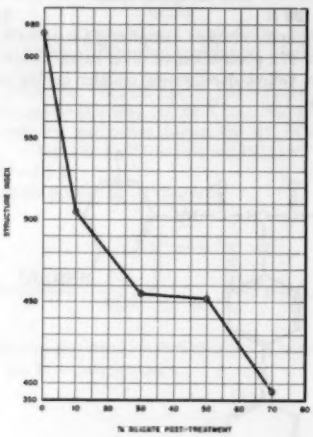
1. A paint and coating composition having incorporated

therewith, as a flatting agent, a finely divided, amorphous, precipitated silicon dioxide having:

(a) a wet cake moisture content of from between about 77.9 to 83.5% where it is between about 77.9 to 83.2% in the presence of a metal cation and between about 79.8 to 83.5% in the absence of said metal cation;

(b) a structure index of from between about 350 to 505 where it is between about 350 to 495 in the presence of said metal cation and between about 395 to 505 in the absence of said metal cation;

(c) an oil absorption of from between about 190 to 212 cc/100 grams where it is between about 193 to 212 cc/100 grams in the presence of said metal cation and between about 190 to 202 cc/100 grams in the absence of said metal cation;



(d) a void volume of from between about 3.19 to 4.44 cc Hg/g SiO_2 where it is between about 3.19 to 4.44 cc Hg/g SiO_2 in the presence of said metal cation and between about 3.55 to 4.14 cc Hg/g SiO_2 in the absence of said metal cation;

(e) a BET surface area of from between about 120 to 220 m^2/g where it is between about 153 to 220 m^2/g in the presence of said metal cation and between about 120 to 153 m^2/g in the absence of said metal cation; and

(f) a percent friability of from between about 20 to 98% where it is between about 28 to 93% in the presence of said metal cation and between about 20 to 98% in the absence of said metal cation;

wherein said silicon dioxide comprises at least 90% SiO_2 and said metal cation is selected from the group consisting of aluminum, magnesium, zinc and calcium.

4,157,921

OVEN CLEANING METHOD AND COMPOSITION

Susan E. Baturay, Andover; Daniel S. Dzury, Westfield, and William J. Lueschen, Somerville, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,584

Int. Cl.² B08B 9/00; C11D 7/06

U.S. Cl. 134—4 **8 Claims**

1. A thixotropic oven cleaning composition, suitable for use in a pump spray, comprising water, 1 to 7% of an alkali selected from the group consisting of sodium hydroxide, potassium hydroxide and lithium hydroxide, 0.2 to 5% of a first thickener, 0.01 to 1% of a surfactant, 1–15% of a humectant, 1–20% of an organic solvent and 0.5 to 10% of a second thickener comprising a thixotropic emulsion of a copolymer of acrylic acid and ethylene.

4,157,922

CLEANING APPARATUS, ESPECIALLY FOR DENTURES

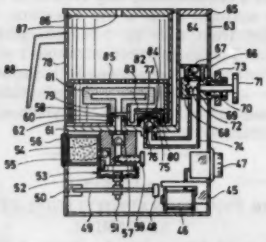
Manfred Luik, Ulmer Str. 18, 7250 Leonberg, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,887

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734287

Int. Cl.² B08B 3/02

U.S. Cl. 134—58 R **10 Claims**



1. In a cleaning apparatus including a base, an air pump arranged within the base and having an air outlet, and a separate container adapted for receiving a cleaning liquid and an object to be cleaned, a combination comprising, an air inlet provided in said container and adapted for snugly fitting said air outlet in said base when said container is placed in its operative position on said base; and valve means disposed at said inlet to prevent leakage of said cleaning liquid when said container is removed from said base.

4,157,923

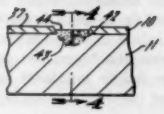
SURFACE ALLOYING AND HEAT TREATING PROCESSES

Chia M. Yen, Plymouth, and Uck I. Chang, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 13, 1976, Ser. No. 722,965

Int. Cl.² C22C 37/00; B23K 9/00, 26/00

U.S. Cl. 148—4 **17 Claims**



1. A method of treating a selected exposed region of a non-allotropic metal article for enhancing the physical properties of said region, comprising:

(a) selecting the non-allotropic metal for said article having a thermal conductivity of at least 0.25 Cal. /cm^2cm/sec./°C.,

(b) directing a high energy beam at an exposed region of said article to heat said article at a first zone and to melt said article at a second zone within said first zone to a predetermined depth, said beam providing an energy level at the interface with said article of at least 10,000 watts/cm^2,

(c) either prior to or simultaneous with directing a high energy beam at said article, introducing a molten alloying ingredient to said second zone to be mixed with the molten metal thereof, said alloying ingredient comprising a material having an affinity for said non-allotropic metal to

form a solid solution with intermetallic compounds therewith, and to form precipitate particles, said alloying ingredients being introduced is proportioned to be within the range of 1:1 to 1:10 taken as a ratio of alloying ingredient to melted non-allotropic metal in said second zone.

(d) controlling the area of said beam interface, beam energy level, and rate of displacement of said beam along said article to restrict said first zone to a predetermined volume and insure a predetermined fast heat-up rate of said first zone, and

(e) proportioning the mass of said article to the volume of said first zone to provide a fast self-quenching cooling rate of said first zone upon removal of the influence of said beam therefrom whereby a fine grain solution-hardened structure and fine precipitated particles are promoted in at least said second zone.

4,157,924

PROCESS OF APPLYING WELDABLE COATING COMPOSITIONS TO A METALLIC SUBSTRATE

William J. Elms, Lake Jackson, and Steven A. Weitzel, Richwood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1978, Ser. No. 937,011
Int. Cl.[2] C23F *7/26*
U.S. Cl. 148—6.2 **11 Claims**

1. In a process for applying a weldable coating to a metallic substrate which comprises applying to said substrate having a clean surface

(I) a first coating containing a hexavalent chromium component and/or a phosphate component and an electroconductive pigment and thereafter curing said coating and

(II) applying over said cured first coating a second coating which is weldable coating containing a high molecular weight epoxy or phenoxy resin, a diluent and an electroconductive pigment and subsequently curing same;

the improvement wherein at least 70 weight percent of said high molecular weight epoxy or phenoxy resin in said second coating has been replaced with a coating composition comprising

(A) a low molecular weight epoxy resin or mixtures thereof having an average of more than one vicinal epoxy group per molecule,

(B) a hydroxyl-containing or thiol-containing material or mixture of such materials which is (1) a polyhydric phenolic or thiophenolic compound or (2) the product of reacting (a) a low molecular weight epoxy resin or mixtures thereof having an average of more than one vicinal epoxy group per molecular with (b) a polyhydric phenolic or thiophenolic compound, a hydrogenated or partially hydrogenated polyhydric phenolic compound or mixture of such compounds wherein the phenolic hydroxyl or thiol:epoxy equivalent ratio is from about 2:1 to about 12:1, and

(C) a catalytic quantity of a catalyst for effecting the reaction between (A) and (B), and

wherein (A) and (B) are present in quantities such that the hydroxyl or thiol to expoxy equivalent ratio is from about 0.5:1 to about 1.1:1.

4,157,925

TEXTURE ANNEALING SILICON STEEL

Frank A. Malagari, Jr., Freeport; Robert F. Miller, New Kensington; Jack W. Shilling, Monroeville, and James H. Wells, Natrona Heights, all of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Apr. 12, 1978, Ser. No. 895,678
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 **10 Claims**

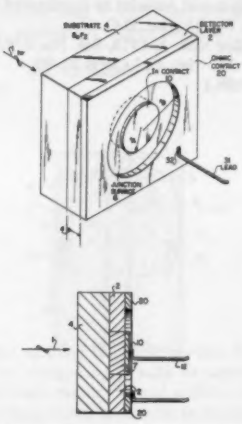
1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation, which process includes the steps of: preparing a melt of silicon steel containing, by weight, from 0.02 to 0.06% carbon, from 0.015 to 0.15% manganese, from 0.005 to 0.05% of material from the group consisting of sulfur and selenium, from 0.0006 to 0.0080% boron, up to 0.0100% nitrogen, up to 1.0% copper, less than 0.005% antimony, less than 0.009% aluminum and fromm2.5 to 4.0% silicon; casting said steel; hot rolling said steel; cold rolling said steel; decarburizing said steel; applying a refractory oxide coating to said steel; and final texture annealing said steel at a maximum temperature of 2300° F.; the improvement comprising the steps of final texture annealing said steel by heating it to a temperature in excess of 2000° F. and maintaining it at a temperature in excess of 2000° F. for a period of time sufficient to effect a purification of said steel, said steel being heated from a temperature of 1700° F. to a temperature of 1900° F. at an average rate of less than 30° F. per hour, so as to provide a minimum time period for the selective grain growth process to occur, said steel being maintained at a temperature in excess of 2000° F. for a period of at least 4 hours.

4,157,926

METHOD OF FABRICATING A HIGH ELECTRICAL FREQUENCY INFRARED DETECTOR BY VACUUM DEPOSITION

Richard B. Schoolar, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 771,717, Feb. 24, 1977. This application Jun. 22, 1978, Ser. No. 918,133
Int. Cl.[2] H01L *21/363, 27/14*
U.S. Cl. 148—175 **6 Claims**



1. A method of making a photovoltaic detector, comprising the steps of:

depositing in a vacuum chamber at an elevated temperature an epitaxial layer of semiconductor material having a first type conductivity upon an electrically insulating crystalline substrate, whereby the epitaxial layer has two major opposed surfaces being respectively, the top and the substrate-mating surfaces;

the material being selected from the Group consisting of:

lead salts,
lead tin salts,
lead cadmium salts,
cadmium salts,
or alloys thereof;

cooling the crystalline substrate and epitaxial layer;

depositing upon an undefined portion of the top surface a non-ohmic electrical contact of a metal rich in a second and opposite type conductivity impurity; and,

thermally treating the resulting product to bring about diffusion of said second and opposite type conductivity impurities through to the substrate-mating surface of said epitaxial layer.

4,157,927

AMINE-BORANES AS HYDROGEN GENERATING PROPELLANTS

William M. Chew, Fullerton, Calif.; James A. Murfree; Pasquale Martignoni, both of Huntsville, Ala.; Henry A. Nappier, Laceys Spring, Ala., and Orval E. Ayers, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 6, 1978, Ser. No. 883,630
Int. Cl.[2] C06B *43/00*
U.S. Cl. 149—22 4 Claims

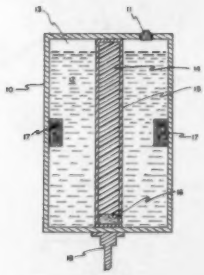
1. A solid propellant composition in the form of a compacted solid propellant pellet, said solid propellant producing hydrogen or deuterium from a self-sustaining reaction after said reaction is initiated by a heat source sufficient to initiate said reaction, said solid propellant composition comprising a predetermined molar ratio mixture of a first reactant composition and a second reactant composition, said first reactant being selected from the group consisting of amine-boranes and their derivatives, and said second reactant being selected from the group consisting of $LiAlH_4$, $NaBH_4$, Fe_2O_3 and mixtures thereof, said first reactant being present in a mole ratio varying from about 1 to about 25, and said second reactant being present in a mole ratio varying from about 1 to about 2.

4,157,928

METHOD FOR FUEL AIR EXPLOSIVE

Charles W. Falterman; James A. Bowen, both of China Lake, and Larry H. Josephson, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1973, Ser. No. 339,662
Int. Cl.[2] C06B *23/00*
U.S. Cl. 149—109.2 2 Claims



1. A method for creating a detonation, said method comprising the steps of:
(a) dispersing in the air, by means of an explosion, a cloud of liquid droplets, approximately 50% of said droplets being ethylene oxide and approximately 50% of said droplets being propylene oxide; and
(b) detonating said cloud of droplets by means of detonators which are dispersed with said cloud of droplets by said explosion.

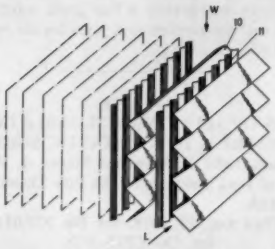
4,157,929

METHOD OF MAKING A POROUS DIMENSIONALLY STABLE HEAT-RESISTANT AND CORROSION-RESISTANT PLATE-LIKE STRUCTURE

Vladimir Kubicek, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 7, 1977, Ser. No. 804,437
Claims priority, application Switzerland, Jun. 17, 1976, 7729/76
Int. Cl.[2] C03B *29/00*; B01D *39/06*
U.S. Cl. 156—89 3 Claims

1. A method of making a porous dimensionally stable heat-resistant and corrosion-resistant packing of contiguous plate-like structures for mass exchange and heat exchange processes, said method comprising the steps of
obtaining a plurality of flat structures of glass filaments with open meshes;
impregnating each structure with a binder capable of stiffening each structure on drying;
thereafter shaping each structure into a corrugated form while drying each structure to stiffen each structure and retain the corrugated form;
assembling the corrugated structures together to form a packing;



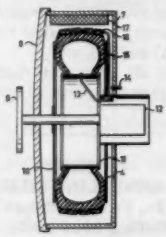
immersing the assembled corrugated structures into a ceramic substance to form a coating which is capable of being fired on the corrugated structures; and
thereafter firing the coated assembled structures at a temperature sufficient to form a solid skin of the ceramic substance to envelope the glass filaments and to define a skeleton-like supporting structure with each structure defining a plurality of flow paths and with open meshes in each structure, said temperature being at least in the range of the melting temperature of the glass filaments to cause the individual adjacent corrugated structures to fuse together at intersecting points of contact.

4,157,930

METHOD OF RETREADING VEHICLE TIRES USING MICROWAVE HEATING

Leif A. B. Björkman, Stockholm, and Lars-Erik J. Eklund, Danderyd, both of Sweden, assignors to Elektra Regummeringsteknik Aktiebolag, Upsala, Sweden

Filed Sep. 28, 1977, Ser. No. 837,638
Claims priority, application Sweden, Oct. 4, 1976, 7610987
Int. Cl.[2] B29H *17/36*
U.S. Cl. 156—96 2 Claims



1. Method of retreading vehicle tires using a prevulcanized tread and a tiegum, characterized in that
(a) the tire carcass (3) is prepared and scraped in a manner known per se, and any damage is repaired;
(b) a strip of rubber-base bonding material (2), whose dielectric loss factor $\epsilon'' = \epsilon \cdot \tan\delta$, where ϵ designates the dielectric constant and δ is the dielectric loss angle, at a selected vulcanization temperature for the bonding strip is greater

than the loss factor of the prevulcanized tread, is applied to the tire carcass;

(c) the prevulcanized tread (1) is applied on top of the bonding strip (2) and the assembly comprising carcass, bonding strip and tread is joined together by means of a roller device, the tire is provided with an inner tube (4,15) for water, is mounted on a rim (6,11) and is provided with an outer tube (outer cover) (16, FIG. 10 and FIG. 9), provided with an air evacuation outlet;

(d) the entire tire assembly is placed in an autoclave between two pressure plates (10), the inner tube (15) is filled with hot water to a pressure of about 750 kPa/cm^2 and the autoclave chamber is filled with air to a pressure of about 500 kPa/cm^2; and

(e) the assembly comprising carcass, bonding strip and tread is set in rotation and is vulcanized together by means of microwave energy from a microwave applicator (17) disposed inside the autoclave.

4,157,931

PROCESS FOR PRODUCING INFORMATION CARRYING DISCS

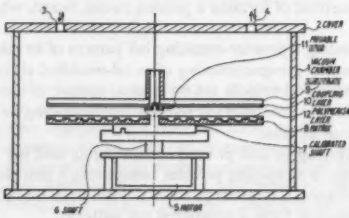
Claude Bricot; François Le Carvennec, and Gérard Robin, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Jul. 18, 1978, Ser. No. 925,881

Claims priority, application France, Jul. 22, 1977, 77 22565

Int. Cl.^{2} B29D *17/00;* **B29C** *27/00, 13/00*

U.S. Cl. 156—230 **9 Claims**



1. A process for reproducing in a vacuum chamber an information carrying disc from an engraved matrix having a centering hole comprising the steps of:

covering a substrate having a centering hole with a layer of coupling material capable of adhering to said substrate;

placing said substrate on a calibrating shaft about said hole;

rotating said shaft and depositing polymerizable material on said coupling layer;

placing a matrix on said shaft having an engraved face facing said polymerizable material and held at a distance therefrom;

establishing a vacuum in said chamber and bringing said matrix and polymerizable material into contact;

admitting air into said chamber;

polymerizing said polymerizable material and shaping said material against said engraved matrix; and

separating the matrix and substrate with the polymerized material adhering thereto.

4,157,932

CONNECTING METHOD

Osamu Hirata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,638

Claims priority, application Japan, Nov. 4, 1976, 5132609

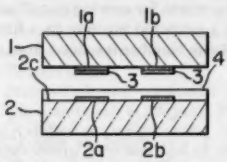
Int. Cl.^{2} B32B *7/00*

U.S. Cl. 156—310 **5 Claims**

1. A method of connecting electrical parts to each other which comprises the steps of:

selectively coating an insulating adhesive composed of a heat fusible material and electroconductive particles dispersed therein on a plurality of terminals of a first member,

coating an insulating adhesive uniformly on a plurality of terminals of a second member and the surface of the second member in which the terminals are is not present, and



heating under pressure to adhere the first member to the second member with the terminal of the first member being opposite to that of the second member so that the first and second members are adhesively fixed to each other while respective terminals of the first and second members are electrically connected via a mixing of the conductive and insulating adhesives.

4,157,933

TIRE TREAD MOLDING APPARATUS

Anthony G. Goodfellow, Maghull, near Liverpool, England, assignor to Dunlop Limited, United Kingdom

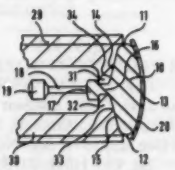
Division of Ser. No. 579,424, May 21, 1975, Pat. No. 4,057,446.

This application Aug. 8, 1977, Ser. No. 822,887

Claims priority, application United Kingdom, May 28, 1974, 23575/74

Int. Cl.^{2} B29H *17/04*

U.S. Cl. 156—414 **9 Claims**



1. Apparatus for molding the tread portion of a pneumatic tire, the apparatus comprising a solid or substantially solid annular former of elastomeric material without splits or channels therein, stretching means actuatable to increase the diameter of the former and supporting means engageable with the inner periphery of the former, the arrangement being such that after positioning an inextensible breaker structure around the former the stretching means is actuatable to expand the former, thereby placing the breaker structure is tension, and when subsequently the tread portion is molded onto the radially outer surface of the former over the tensioned breaker structure the supporting means supports the former against radially inward deformation under molding pressures.

4,157,934

LOW TENSION LAP SLICER UNIT

Ralph L. Ryan, East Hanover, and Charles M. Taitel, Parsippany, both of N.J., assignors to Compensating Tension Controls, Inc., West Caldwell, N.J.

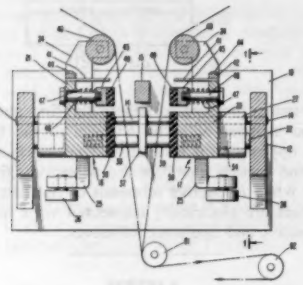
Filed Jul. 18, 1977, Ser. No. 816,282

Int. Cl.^{2} B65H *19/18, 19/20*

U.S. Cl. 156—504 **7 Claims**

1. A splicer for lap splicing end of a supply web onto a depleting running web including in combination stationary bar means extending transversely of the web and providing knife edges at its upper end, first and second carriages mounted on

opposite sides of said bar means to be moveable toward and away from said bar means, each of said carriages carrying a knife member rigidly mounted thereon for cooperating with one of said knife edges to cut the running web, a clamping pad positioned below said knife member, spring means for biasing said pad in the extended position, pressure pad means below said bar means, means for moving one of said carriages prior to a splice from a retracted position to a first operated position wherein said knife member is spaced from said knife edges and



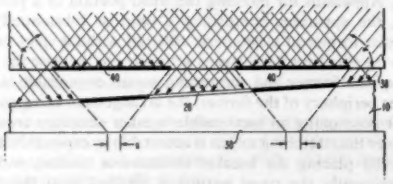
said clamping pad is pressed against said stationary bar means to hold the end of the supply web aligned with the pressure pad thereof, and means for moving the other of said carriages from a retracted position to a second operated position wherein said knife member thereof moves past one of said knife edges to sever the running web and said pressure pad thereof impacts against the pressure pad of the first carriage to force the running web against a strip of double face tape applied to the end of the supply web to thereby splice the webs.

4,157,935

METHOD FOR PRODUCING NOZZLE ARRAYS FOR INK JET PRINTERS

Erik R. Solyst, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,827
Int. Cl.[2] H01L *21/308*
U.S. Cl. 156—644 **11 Claims**



1. The method for producing nozzle arrays for ink jet printers comprising the steps of:

mounting a radiation sensitive wafer in physical contact with a base member; said wafer comprising a crystalline material having greatly different anisotropic etch rates in different crystallographic directions;

positioning a mask structure having a predetermined pattern of orifice masks thereon parallel to the base member;

exposing the wafer through the mask by a columnar light source directed at a predetermined acute angle to said wafer and simultaneously producing relative rotational motion between said light source and said wafer around an axis perpendicular to the base member;

treating the wafer to render it subject to anisotropic etching only in the non-exposed areas of the wafer; and

anisotropically etching the wafer to produce uniform orifices corresponding to said predetermined pattern from said wafer.

10. The method for producing nozzle arrays for ink jet printers comprising the steps of:

mounting a radiation sensitive wafer in physical contact with a base member; said wafer comprising a crystalline material having greatly different anisotropic etch rates in different crystallographic directions;

positioning a mask structure having a predetermined pattern of orifice masks thereon parallel to the base member;

exposing the wafer through the mask by a plurality of columnar light sources spaced around said wafer, each of said light sources being directed at a predetermined acute angle to the wafer;

treating the wafer to render it subject to anisotropic etching only in the non-exposed areas of the wafer; and

anisotropically etching the wafer to produce uniform orifices corresponding to said predetermined pattern from said wafer.

4,157,936

METHOD OF RENDERING AN INK STRIPPABLE

John R. Piazza, East Amwell Township, Hunterdon County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,324
Int. Cl.[2] C23F *1/02*
U.S. Cl. 156—659 **5 Claims**

1. A method of forming a printed circuit board, which comprises:

(a) printing a powder-retaining ink pattern of an ink selected from the group consisting of an oil-modified alkyd ink and a drying oil vehicle ink on a metal surface of a metal clad dielectric base, said ink pattern corresponding to a desired circuit pattern;

(b) applying to said printed surface while said ink is wet or tacky, a modifying powder comprising a petroleum resin to deposit a retained powder deposit only on said printed pattern to form a powdered ink pattern;

(c) heating at least said powdered ink pattern to at least fuse said modifying powder contained thereon to form a surface having a modifying coat over said ink pattern;

(d) treating said modifying coat containing surface with a suitable etchant to selectively remove uninked portions of the metal surface; and

(e) treating said etched surface with a suitable solvent to remove said modifying coat covered ink pattern.

4,157,937

RESOLE RESIN AND POLYVINYL ACETATE IMPREGNATED FILTER PAPER

Woodrow H. Ingram, II, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 21, 1978, Ser. No. 879,552
Int. Cl.[2] D21F *11/00*
U.S. Cl. 162—135 **9 Claims**

1. A filter paper comprising a cellulosic base member impregnated with a fast curing bonding composition consisting essentially of:

A. a phenol-formaldehyde resole resin having a formaldehyde to phenol ratio of about 1.5 to 3.0,

B. a polyvinyl acetate polymer, said polymer being present in said composition in an amount of from about 10 to 60% by weight based on combined resin and polymer solids, and

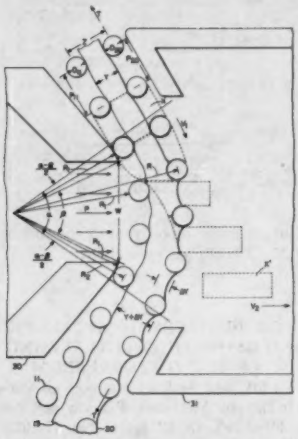
C. an organic solvent, present in amount such that the solids content of said composition is from about 10 to 75% by weight said composition being a solution of (A), (B) and (C) wherein (B) has a molecular weight less than about 60,000.

4,157,938

METHOD AND APPARATUS FOR CONTINUOUSLY EXPELLING AN ATOMIZED STREAM OF WATER FROM A MOVING FIBROUS WEB

Matthew L. Clemens, and Wendell J. Morton, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 21, 1977, Ser. No. 789,609
Int. Cl.[2] D21F *11/00*
U.S. Cl. 162—207 16 Claims



1. In a low-density papermaking process wherein overall compaction of the traveling fibrous paper web is avoided, the improvement comprising a nondestructive method for expelling a continuous atomized stream of moisture from said traveling moist fibrous web, said method comprising the steps of;

(a) constraining said moist fibrous web between a first traveling foraminous support member comprised of a plurality of spaced longitudinal filaments extending generally in the machine direction interwoven with a plurality of spaced transverse filaments extending generally in the cross-machine direction and a second traveling foraminous support member comprised of a plurality of spaced longitudinal filaments extending generally in the machine direction interwoven with a plurality of spaced transverse filaments extending generally in the cross-machine direction to form a unified traveling composite structure;

(b) directing said first traveling foraminous support member of said composite structure across the surface of a stationary pressure plenum connected to a source of compressible fluid maintained at pressure, P, said pressure plenum having a slotted orifice extending continuously in a direction substantially perpendicular to the direction of travel of said composite structure across the entire width of said moist fibrous web;

(c) applying tension, T, to said second foraminous support member as said composite structure crosses said slotted orifice in accordance with the relation $T>P\times R$, where P=pressure of the compressible fluid supplied to said stationary plenum and R=minimum radius of curvature said second traveling foraminous support member is capable of assuming across said slotted orifice such that said composite structure is maintained in a unified condition and said first traveling foraminous support member is maintained in sealed relation to said slotted orifice; and

(d) directing a continuous jet of said compressible fluid from said slotted orifice directly through said composite structure as it crosses said slotted orifice, thereby expelling a continuous atomized stream of moisture across the entire width of said traveling moist fibrous web.

10. In a low density papermaking machine wherein overall compaction of the traveling web is avoided, the improvement comprising a nondestructive fibrous web dewatering apparatus, comprising:

(a) a first traveling foraminous support member comprised of a plurality of spaced longitudinal filaments extending generally in the machine direction interwoven with a plurality of spaced transverse filaments extending generally in the cross-machine direction, said member having an interior and an exterior surface, the exterior surface of said foraminous support member contacting and supporting said moist fibrous web;

(b) a stationary pressure plenum connected to a source of compressible fluid maintained at pressure, P, said pressure plenum having a slotted orifice extending continuously in a direction substantially perpendicular to the direction of travel of said first traveling foraminous support member across the entire width of said moist fibrous web;

(c) a second tension controlled foraminous support member comprised of a plurality of spaced longitudinal filaments extending generally in the machine direction interwoven with a plurality of spaced transverse filaments extending generally in the cross-machine direction in superposed relation to and traveling with said moist fibrous web and said first traveling foraminous support member to form a composite structure therewith; and

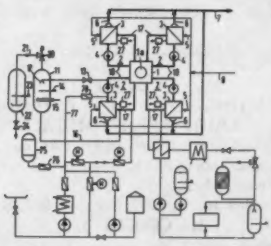
(d) means for applying tension, T, to said second foraminous support member as said composite structure travels across said slotted orifice in accordance with the relation $T>P\times R$, where P=pressure of the compressible fluid supplied to said stationary plenum, and R=minimum radius of curvature which said second traveling foraminous support member is capable of assuming across said slotted orifice such that said second traveling foraminous support member, said moist fibrous web and said first foraminous support member are maintained in a unified condition and the interior surface of said first traveling foraminous support member is maintained in sealed relation to said slotted orifice.

4,157,939

PRESSURIZED-WATER REACTOR EMERGENCY CORE SHUTDOWN

Hans-Peter Schabert, Erlangen; Leonhard Irion, Rückersdorf, and Hartmut Seidelberger, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Apr. 14, 1975, Ser. No. 567,901
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1974, 2418325
Int. Cl.[2] G21C *9/00*
U.S. Cl. 176—38 14 Claims



1. A pressurized-water reactor installation comprising a pressure vessel containing a core, a main coolant system comprising at least one main coolant loop formed by a steam generator and a main coolant pump and main coolant piping interconnecting the vessel, pump and generator, said loop containing water coolant and having means for maintaining a normal operating pressure on the water to prevent it from boiling in

the loop and pressure vessel, an emergency core cooling system comprising a supply of emergency water and activating means responsive to a drop in said normal pressure in said loop for automatically feeding the emergency water into said vessel to flood the core, a normally closed valve in said loop for opening the loop to its surrounding atmosphere to a degree dropping the pressure in the loop to below said normal pressure, and means for causing said valve to open automatically in response to an increase in pressure on said water above said normal pressure.

4,157,940

METHOD FOR OPERATING A BATTERY OF HORIZONTAL COKE OVENS

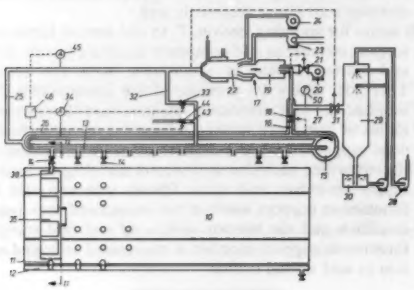
Lewis A. Watson, Uppermill, England, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Division of Ser. No. 779,631, Mar. 21, 1977. This application Jan. 27, 1978, Ser. No. 872,847

Claims priority, application United Kingdom, Mar. 19, 1976, 11073/76

Int. Cl.[2] C10B *27/04, 27/06, 47/06*

U.S. Cl. 201—1 **6 Claims**



1. The method of operating a battery of horizontal coke ovens provided with primary and secondary gas-collecting mains, which comprises passing through the secondary main dust-laden gas which occurs during charging of an oven, maintaining the gas velocity in said secondary main at a level which will prevent settling of dust in the gas within the secondary main, and maintaining the temperature of the gas within said secondary gas-collecting main at a temperature to prevent condensation of tars from the gas contained therein by passing at least a portion of the gas in said secondary main through first and second combustion chambers, the gas in the first combustion chamber being burned with an excess of air, and the amount of gas supplied to the second combustion chamber being such that the combustion products do not contain an excess of air.

4,157,941

METHOD OF ADHERENCY OF ELECTRODEPOSITS ON LIGHT WEIGHT METALS

William A. Donakowski, Dearborn Heights, and John R. Morgan, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 3, 1977, Ser. No. 803,200

Int. Cl.[2] C25D *5/44*

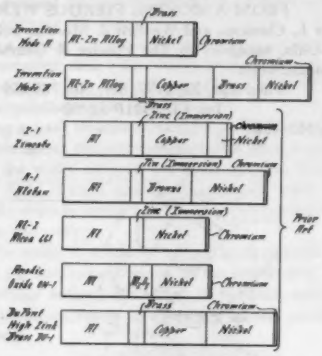
U.S. Cl. 204—33 **6 Claims**

1. A method of plating an aluminum or magnesium based article to provide improved adherency of the plating, comprising:

(a) selecting said article to contain 1–8% alloyed zinc in the surface to be plated,

(b) cleaning said article surface to be substantially free of any oxide film, and

(c) immersing said article in one or more electroplating cells with the voltage on and current uniform in polarity, the electrolyte of said cells being constituted to deposit at least a brass strike directly onto the article, said strike having 20–75% copper by weight.



4,157,942

METHOD FOR RECOVERY OF METALS FROM METAL PLATING BATHS AND NEUTRALIZING TOXIC EFFLUENTS THEREFROM

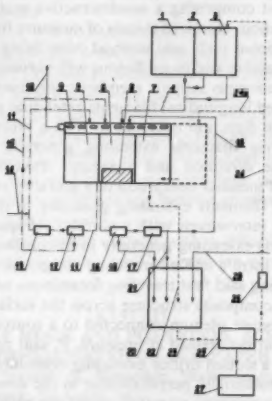
Franciszek Tuznik, and Andrzej Lis, both of Warsaw, Poland, assignors to Instytut Mechaniki Precyzyjnej, Warsaw, Poland

Filed Feb. 18, 1977, Ser. No. 770,026

Claims priority, application Poland, Mar. 8, 1976, 18779

Int. Cl.[2] C25D *5/48*

U.S. Cl. 204—35 R **15 Claims**



1. A method for plating articles with recovery of metals from metal plating baths and constant recycling of water comprising:

A. electroplating articles in a plating bath selected from the group consisting of cyanide plating baths and hexavalent chromium baths;

B. treating said plated articles in an aqueous reclaiming solution having a pH from 3 to 13 comprising:

(a) from about 1% to about 40% by weight of a compound selected from the group consisting of (1) aldehydes of the formula

(2) aldehyde sulfites of the formula

and (3) aldehyde ammonias of the formula

wherein R is selected from the group consisting of hydrogen and aromatic groups;

(b) from 0% to 40% by weight of hydrogen peroxide;

(c) from 0% to 20% by weight of ozone;

(d) from 0% to about 1% of a flocculating agent selected from the group consisting of starch and polyacrylamides;

(e) from 0% to about 1% by weight of a coagulating agent selected from the group consisting of bentonite, iron salts, aluminum salts, and magnesium salts;

C. collecting precipitates resulting from said reclaiming treatment;

D. filtering spent reclaiming solution and returning filtered reclaiming solution for reuse;

E. rinsing with water the articles subjected to reclaiming treatment;

F. adjusting the pH of spent rinse water;

G. transferring the spent rinse water from the pH adjustment to a water recovery installation;

H. recovering and recirculating the spent rinse water and discharging the solid or semi-solid waste collected in the water recovery installation;

I. mixing fumes exhausted from the plating solution with fumes from the reclaiming solution to neutralize the fumes from the plating solution; and

J. continuously recirculating the plating bath within a closed-loop system through a filter, wherefrom the filtration residue deposited upon the filter is transferred to the reclaiming solution and the filtered plating bath is returned to the plating path.

4,157,943

COMPOSITE ELECTRODE FOR ELECTROLYTIC PROCESSES

Anthony J. Scarpellino, Jr., Tuxedo; James McEwen, Warwick, both of N.Y., and William G. Borner, Ringwood, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,631

Int. Cl.[2] C25B *11/08, 11/10;* **C25D** *3/50, 5/50*

U.S. Cl. 204—37 R **32 Claims**

1. In a process for producing a composite electrode for use in an electrolytic cell comprising a valve metal substrate and an outer surface layer comprising ruthenium dioxide, the improvement which comprises providing: (a) a barrier layer comprising a platinum group metal directly on the substrate and (b) between the barrier layer and outer surface layer an intermediate layer comprising a metallic electroplated deposit consisting of ruthenium and iridium, said intermediate layer containing at least a small but effective amount of iridium to reduce ruthenium dissolution during use in said cell, and said intermediate layer being at least partially oxidized.

4,157,944

METHOD FOR PRETREATMENT IN THE PRODUCTION OF TIN-FREE STEEL

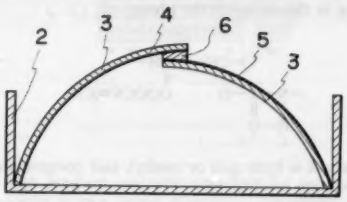
Tsuneo Inui, Tokuyama; Hitoshi Kuroda, Kudamatsu; Kenji Hizuka, Kudamatsu, and Hideaki Hamano, Kudamatsu, all of Japan, assignors to Migita Patent Office, Tokyo, Japan

Filed Jun. 22, 1978, Ser. No. 917,893

Claims priority, application Japan, Oct. 31, 1977, 52-129752

Int. Cl.[2] C25D *5/12, 5/36*

U.S. Cl. 204—41 **3 Claims**



1. A method for the pretreatment of a tin-free steel consisting of an upper layer of hydrated chromium oxide and a lower layer of metallic chromium, which comprises subjecting a steel sheet, before the formation of the upper layer of chromium oxide and lower layer of metallic chromium, to a pretreatment consisting of an anodic treatment followed by a cathodic treatment in an acid electrolyte containing at least one chromate selected from the group consisting of chromic trioxide, a chromate and a dichromate of an alkaline metal, ammonium chromate and ammonium dichromate, after degreasing said steel sheet.

4,157,945

TRIVALENT CHROMIUM PLATING BATHS

John J. B. Ward, Wantage, and Clive Barnes, West Hanney, both of England, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,515

Claims priority, application United Kingdom, Mar. 4, 1977, 9288/77

Int. Cl.[2] C25D *3/06*

U.S. Cl. 204—51 **6 Claims**

1. A trivalent chromium electroplating solution comprising water, trivalent chromium ions in a concentration of at least 0.1 molar, a weak complexing agent in a concentration of at least 0.1 molar, said weak complexing agent being selected from the group consisting of hypophosphite ions and glycine, and sulphide in a concentration of from 1 to 300 ppm by weight.

4,157,946

PROCESS FOR SELECTIVE REMOVAL OF BISMUTH AND ANTIMONY FROM AN ELECTROLYTE, ESPECIALLY IN ELECTROLYTIC REFINING OF COPPER

Olli V. J. Hyvärinen, Pori, Finland, assignor to Outokumpu, Oy, Outokumpu, Finland

Filed Oct. 2, 1978, Ser. No. 947,849

Claims priority, application Finland, Oct. 11, 1977, 772999

Int. Cl.[2] C25C *1/12;* **C01B** *27/00, 29/00;* **C01F** *11/46*

U.S. Cl. 204—108 **6 Claims**

1. A process for the selective removal of antimony and bismuth from an electrolyte solution containing at least 150 g/l H_2SO_4, omprising adding to the electrolyte solution a salt of a cation selected from the group consisting of barium, strontium and lead to precipitate said cation from the solution as a poorly soluble sulfate, co-precipitating the bismuth and antimony.

4,157,947

COATING AND INK COMPOSITIONS AND METHOD

George W. Borden, Charleston; Oliver W. Smith, South Charleston, and David J. Trecker, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

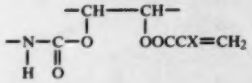
Division of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application Mar. 22, 1973, Ser. No. 343,693

Int. Cl.[2] C09D *3/72*

U.S. Cl. 204—159.23 42 Claims

1. A composition comprising:

I. an acrylated epoxidized soybean oil urethane compound having in the molecule the group:



wherein X is hydrogen or methyl, said compounds being the reaction product of:

(A) epoxidized soybean oil reacted with at least 2 moles of acrylic acid or methacrylic acid and

(B) an organic isocyanate, and

II. from 0–90 weight percent a different acrylyl compound of the group of esters of acrylic acid, methacrylic acid, acrylamide and methacrylamide.

4,157,948

OXYGEN SENSOR TO DETERMINE THE OXYGEN CONTENT IN GASES

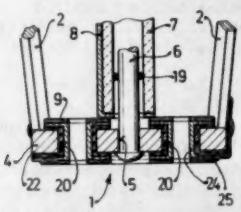
Helmut Maurer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,452

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710218

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 S 14 Claims



1. Oxygen sensor to determine the oxygen content in gases having a measuring cell including a solid electrolyte body (24) comprising

a metallic carrier plate (4) formed with openings (20) therein leaving connecting portions (21) of plate material between the openings;

heating electrode connections (2, 6) secured to the carrier plate and positioned with respect to said openings to locate the openings between the heating electrodes to provide an electric path of reduced cross section and thus a heating resistance path through said connecting portions (21);

an insulating covering (22) over the surfaces of said plate including the edges and internal rims of said openings (20),

said electrolyte body (24) being applied as a layer of electrolyte material on said insulating covering (22) on the plate (4) including the portions of insulating material extending over the edges and internal rims of the openings whereby the plate will form a support for said electrolyte and provide for heating thereof;

a catalytically active electrode (25) applied to said layer of electrolyte body (24) at one side of the plate;

a catalytically inactive electrode (9) applied to said layer of electrolyte body (22) at the other side of said plate (4);

and means (2, 3) supporting said plate, with said layer thereon, for exposure of both sides of said plate, and hence both said electrodes (9, 24) to the gases, the oxygen content of which is to be determined.

4,157,949

CATALYTIC PROCESS FOR TREATING LIGHT GASOLINE STOCKS

Jean R. Bernard, St. Symphorien D'Ozon, and Jacques Bousquet, Irigny, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Dec. 28, 1977, Ser. No. 865,246

Claims priority, application France, Dec. 30, 1976, 76 39549

Int. Cl.[2] C10G *13/02;* B01J *23/56;* C07C *9/06, 5/24*

U.S. Cl. 208—112 18 Claims

1. A hydrogenolysis process for the simultaneous production of ethane and high octane gasoline by selective hydrogenolysis of light gasoline stocks, wherein a mixture of hydrogen and light gasoline stock containing isoparaffins is contacted in a reactor at a spatial velocity V, at a total pressure P, and at a temperature T, with a catalyst consisting essentially of a porous support of a refractory oxide containing less than 0.5% by weight of SO_4 ion, iridium and platinum.

4,157,950

CONVERSION OF HYDROCARBONS

Vincent J. Frilette, Morrisville, and Mae K. Rubin, Bala Cynwyd, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 165,702, Jul. 23, 1971, Pat. No. 4,085,156, which is a continuation-in-part of Ser. No. 697,610, Aug. 3, 1971, Pat. No. 3,597,493, which is a continuation of Ser. No. 494,228, Oct. 8, 1965, abandoned, which is a continuation of Ser. No. 142,778, Oct. 4, 1961, abandoned. This application Oct. 17, 1977, Ser. No. 842,833

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.[2] C10G *35/06;* C07C *3/52*

U.S. Cl. 208—135 9 Claims

1. In a process for increasing the aromatic content of a liquid hydrocarbon charge comprising paraffins and cycloparaffins by contact with a solid catalyst under conversion temperatures of at least 180° C. and recovering from such conversion a liquid hydrocarbon product of greater aromatic content than said charge; the improvement consisting of conducting such conversion by contacting said charge with a catalyst comprising a crystalline aluminosilicate zeolite characterized by a silica to alumina ratio of at least 10.

3. A process for the alkylation of an aromatic hydrocarbon which comprises contacting said aromatic hydrocarbon with an alkylating agent in an alkylation reaction zone under alkylation conditions with a catalyst consisting essentially of a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least 10.

4,157,951

BENEFICIATION APPARATUS

Moon C. Park, 15 Talisay Rd., Forbes Park, Makati, Philippines

Filed Nov. 7, 1977, Ser. No. 849,117

Int. Cl.[2] B03B *5/02*

U.S. Cl. 209—159 16 Claims

1. A beneficiation apparatus for separating severed ore into concentrate and gangue comprising a vessel, a water inlet at the bottom of the vessel, a water outlet opening at the top of the vessel, mens for causing upward flow of water through the vessel from the inlet to the outlet opening, and a downwardly facing turbulence-suppression member approximately at the level of the outlet opening and having a bottom surface

extending horizontally across a substantial center portion of the vessel and contacted by the top surface of the water, whereby gangue is propelled upwardly and discharged

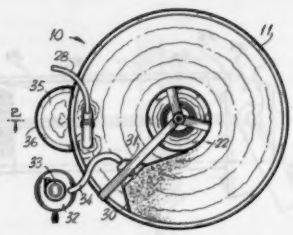
through the outlet opening while concentrate does not rise to the level of the outlet because of its higher specific gravity, the formation of a vortex within the vessel being inhibited by the turbulence-suppression member.

4,157,952

APPARATUS FOR DEINKING WASTE PAPER PULP

Milos Krofta, Lenox, Mass., assignor to Lenox Institute for Research, Lenox, Mass.

Filed Mar. 24, 1978, Ser. No. 889,944
Int. Cl.² B03D *1/24*
U.S. Cl. 209—170 **1 Claim**



1. Apparatus for deinking waste paper pulp slurry using the foam flotation process comprising

a cylindrically shaped tank open at its upper end in which the diameter of the tank is large compared to the depth of slurry therein,

inlet slurry and air injection nozzle means positioned adjacent the top outer edge of said tank in said tank, said nozzle being directed downwardly at an angle ranging from thirty to sixty degrees, said nozzle being directed tangentially at an angle from sixty to ninety degrees so that the discharged slurry and air is moved around the tank in a swirling rotation,

deinked slurry outlet means regulating the slurry level and positioned at the center of said tank,

a foam baffle member extending substantially across the top of said tank from said central outlet means to the edge of said tank,

vacuum foam inlet means positioned in said foam baffle member and located so as to be below the normal level of foam and above the liquid level of slurry,

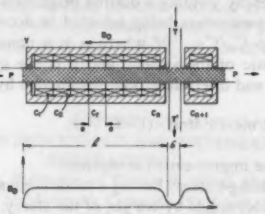
and means adapted to supply slurry to said injection nozzle at a pressure of the order of ten to twenty pounds per square inch, and means adapted to supply air to said injection nozzle at a pressure of the order of one to five water column inches pressure so that the volume of the air supplied is at a ratio of the order of two to four times the volume of slurry.

4,157,953

MAGNETIC SEPARATION OF IRON PYRITE FROM COAL

Osman K. Mawardi, 15 Mornington La., Cleveland Heights, Ohio 44106

Filed Jan. 28, 1977, Ser. No. 763,571
Int. Cl.² B03C *1/10*
U.S. Cl. 209—213 **8 Claims**



1. A high gradient magnetic separator for removing magnetic particles from a stream of material comprising:

an elongated container having an inlet, an outlet and diverter means;

a matrix of magnetizable material within said container;

a plurality of magnetic coils surrounding said container and in sequence along the container between said inlet and outlet, each magnetic coil being magnetizable to produce a magnetic field applied parallel to the motion of the stream of material;

means for magnetizing said coils to trap magnetic particles in the matrix;

means for demagnetizing said coils in sequence along the direction of the stream to sequentially release magnetic particles therein thereby forming a traveling magnetic wave in said stream of material to collect and move the trapped particles to said diverter means; and

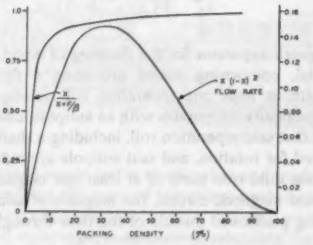
flushing means separating a stream containing a concentrate of said trapped particles thru said diverter means.

4,157,954

METHOD FOR IMPROVING PRODUCTION RATES DURING BENEFICATION OF PARTICLE DISPERSIONS

Robin R. Oder, Novato, Calif., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 12, 1976, Ser. No. 731,388
The portion of the term of this patent subsequent to Oct. 12, 1993, has been disclaimed.
Int. Cl.² B03G *1/00*
U.S. Cl. 209—214 **1 Claim**



1. An improved method for effecting magnetic separation of magnetically attractable discolorant particles from an aqueous clay slurry including said particles, applicable to a process of magnetic separation comprising passing a slurry, having a solids content, S, of from 27% to 60% clay solids by weight of the slurry, through a ferromagnetic filamentatious matrix within a non-magnetic canister disposed in a magnetic field; said matrix forming part of a magnetic separator system characterized by the parameters Q, d, η, M, X, H and τ where Q is the magnetic susceptibility and d the mean diameter of said attractable particles, η is the slurry viscosity and is a function

of the solids content, S, of the slurry; M the magnetization and D the mean diameter of the filaments of said matrix, X is the fraction of said canister volume occupied by said matrix, H is the intensity of the applied magnetic field, and τ is the retention time for said dispersion in said field; and in which the operation of said system being effected under the constraint of yielding a desired C_o/C ratio, where C is the number of said discolorant particles entering said system and C_o is the number leaving said system, thereby yielding a desired brightness increase for said clay; said parameters being selected in accordance with the relationship $C_o/C=_e{}^{-\alpha p}$ where α is a numerical coefficient characteristic of the system, and p is the system separation parameter and interrelates said parameters by the expression:

$$p=Q/\eta(d/D)^2M\tau H\times(1-X)$$

wherein the improvement comprises:

(1) providing a slurry having a solids content of from 27% to 60% clay solids by weight of the slurry;

(2) passing said slurry through said ferromagnetic filamentatious matrix within said non-magnetic canister disposed in a magnetic field to yield a predetermined brightness increase at a desired production rate by adjusting the packing of said non-magnetic canister with said ferromagnetic filamentatious matrix so that from 0.20 to 0.45 of said canister volume is occupied by said matrix and said predetermined brightness increase and desired production rate are obtained.

4,157,955

MAGNETIC SEPARATOR

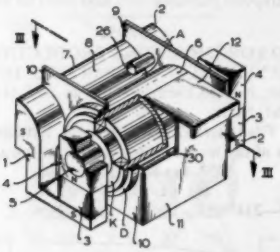
Heinrich Spodig, 4714 Selm-Bork, Netteberge 202, Fed. Rep. of Germany

Filed Mar. 16, 1977, Ser. No. 778,226

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612834

Int. Cl.[2] B03G *1/26*

U.S. Cl. 209—219 **12 Claims**



1. A magnetic separator for the cleaning of liquid, pasty and dry material, comprising means providing a flow-through housing with at least one separation roll arranged therein which magnetically cooperates with an antipole, characterized by the fact that said separation roll, including a shaft on which it is mounted for rotation, and said antipole are induced poles and comprise mild iron parts of at least one magnetic system with a closed magnetic circuit, the magnets of said magnetic system being positioned outside of the flow-through housing.

4,157,956

SCREENING BUCKET

Leo E. Robinson, 4136 Brentwood, Fresno, Calif. 93703

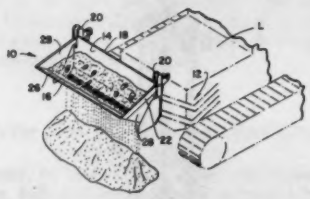
Filed Apr. 19, 1978, Ser. No. 897,589

Int. Cl.[2] E02F *7/00*; B07B *1/28*

U.S. Cl. 209—260 **7 Claims**

1. An improved screening bucket comprising:

a rear panel, a bottom panel disposed in displaceable engagement with the rear panel, means for displacing said bottom panel out of engagement with said rear panel for thus establishing therebetween a discharge opening for the bucket, a flexible screen having one end connected to said bottom panel supported to be transported by the bottom panel into an occlusive relationship with said discharge opening as the bottom panel is displaced, and stowage



means for said flexible screen externally related to said bucket including means for paying-out said screen from stowage as the screen is transported by said bottom panel into an occlusive relationship with the opening.

4,157,957

SPLITTER ASSEMBLY HAVING AN ADJUSTABLE GAP WIDTH

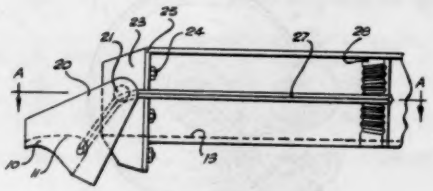
Philip J. Giffard, Southport, Australia, assignor to Mineral Deposits Limited, Australia

Filed Feb. 10, 1978, Ser. No. 876,723

Claims priority, application Australia, Feb. 17, 1977, PC9099

Int. Cl.[2] B03B *11/00, 5/62*

U.S. Cl. 209—493 **8 Claims**



1. A splitter assembly of the type wherein a pulp stream is discharged from the discharge edge of a stratification surface across a gap to impinge against a splitter so as to separate into upper and lower flow components, the lower component passing through said gap while the upper component flows over said splitter, the splitter having a generally curved impingement surface and mounted to be adjustable relative to the stratification surface such that the gap width in the direction of stream flow increases as the required lower flow component increases and decreases as the required lower flow component decreases, the splitter assembly being hingedly mounted for rotation about an axis located above said stratification surface and displaced upstream from said discharge edge.

4,157,958

INVERTED VESSEL PROCESSING METHOD FOR THE PRODUCTION OF METHANE GAS

Bernard H. Chow, 6340 Morazgan St., North Highlands, Calif. 95660

Filed Mar. 17, 1978, Ser. No. 887,780

Int. Cl.[2] C02C *1/14*

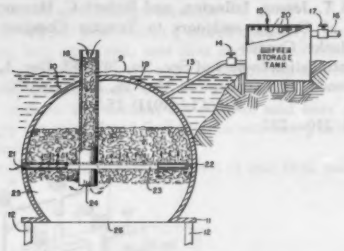
U.S. Cl. 210—12 **9 Claims**

6. A method of recovering the combustible gases generated by the bacterial decomposition of organic matter which comprises:

(a) introducing said organic material into a vessel with an open bottom positioned in a body of water,

(b) agitating said organic material by introducing jets of

water into said vessel while maintaining the temperature in said vessel at about 70° F.–100° F. (20° C.–37.8° C.)



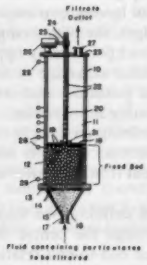
(c) collecting said combustible gas in the upper portion of said vessel and removing said gases to a storage tank.

4,157,959

METHOD OF FILTRATION USING CONVERTIBLE (SEMIFLUIDIZED) BEDS

Chin-Yung Wen, Morgantown, W. Va., and Liang-Tseng Fan, Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Aug. 15, 1977, Ser. No. 824,840
Int. Cl.² B01D *33/40, 37/00*
U.S. Cl. 210—20 **8 Claims**



1. The method of filtering fine particulates from a fluid with a bed of granular filter medium capable of retaining the particulates while permitting the fluid to pass therethrough, comprising:

(a) supporting said granular bed within a confined upwardly-extending zone above a fluidization inlet;

(b) restraining the upper surface of said bed with a perforated plate for retaining said filter medium within said zone while permitting fluid to pass therethrough, said plate being mounted within said zone for positioning at selected elevations therein and the perforations in said plate being of smaller size than the granules of said medium;

(c) passing upwardly through said inlet and said restrained bed a fluid containing the fine particulates to be filtered, said fluid having an upward velocity of at least two times the minimum fluidization velocity for said bed when unrestrained;

(d) collecting a cake of said particulates in a lower portion of said bed while maintaining said bed from the level of said cake collection upward as a fixed non-fluidized bed;

(e) continuously or intermittently breaking up the lower portion of said cake by raising said plate and decreasing the downward extent of said fixed bed portion while continuing to pass said fluid through said bed, said fixed bed portion progressively decreasing in downward extent and a fluidized bed portion being provided therebeneath of progressively increasing size, said cake being reformed by the collection of said particulates in said fixed bed portion as it decreases in downward extent and the broken up cake being retained as circulating solids in said increasing fluidized bed portion;

(f) terminating the passing of said fluid and raising said plate above said bed to provide a freeboard space thereabove; and

(g) passing a purging fluid through said bed at a velocity fluidizing all of said bed and sweeping said particulates therefrom, said particulates being removed with said purging fluid.

4,157,960

METHOD FOR ENHANCING MEMBRANE SEPARATION

Richard C. Chang, Raleigh, and Robert R. Ward, Cary, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1977, Ser. No. 855,852
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 R **25 Claims**

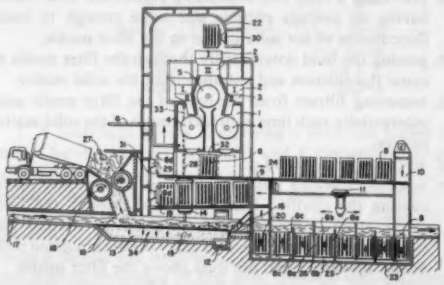
1. A method for enhancing the selectivity for fluid separation of a membrane in which the material of the membrane significantly effects the fluid separation, said membrane having a barrier layer with pores therethrough which adversely affect the selectivity of fluid separation and said membrane being resistant to biodegradation, comprising storing the membrane in an aqueous medium having an essential absence of a bacteriostat for a time sufficient to provide growths of microorganisms and thus enhance the selectivity of fluid separation of the membrane.

4,157,961

COMBINED WASTE WATER CLARIFICATION AND TRASH DISPOSAL SYSTEM

Adolf H. Borst, Schloss Ramsberg, 7322 Donzdorf, Fed. Rep. of Germany

Filed Dec. 22, 1976, Ser. No. 753,402
Int. Cl.² C02C *5/02*
U.S. Cl. 210—33 **4 Claims**



1. A combined waste water clarification and trash disposal method comprising the steps of entraining trash including an organic substance in a waste water flow to form a waste water-trash mixture; agitating the mixture; decelerating the flowing mixture downstream of a point at which the mixture is agitated; retaining the mixture in its decelerated state for a sufficient length of time to permit materials having a specific gravity greater than water to settle to the bottom of the mixture flow; removing from the bottom materials that have settled out; providing a filter stocked with original filter carbon; flowing the mixture through the filter to remove trash particles and water contaminants from the mixture and form clarified water and a residue on the carbon including an organic substance; intermittently removing from the filter and regenerating at least part of the filter carbon by heating the filter carbon and the adhering residue under an oxygen deficiency to thereby

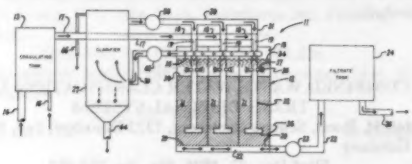
degas organic residue substances and form additional filter carbon from such substances together with an incompletely burnt gas; thereafter intermittently replacing in the filter previously removed filter carbon and additional filter carbon freshly formed during the regenerating step from previously removed, adhering organic substances; and again flowing the mixture through the replaced filter carbon.

4,157,962

FILTRATION METHOD AND APPARATUS

Jerry Y. C. Huang, N 81 W5227 Bywater La., Cedarburg, Wis. 53012; George E. Wilson, 4212 N. River Way, Sacramento, Calif. 95825, and Phillip C. Fischbach, 2249 Rogue River Dr., Sacramento, Calif. 95826

Filed Nov. 18, 1977, Ser. No. 852,626
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—42 R **9 Claims**



1. A method of filtering suspended solid matter from a fluid containing a coagulant comprising the steps of:

a. providing a filter bed containing particulate filter media having an average particle size large enough to cause flocculation of the solid matter in the filter media;

b. passing the fluid downwardly through the filter media to cause flocculation and entrapment of the solid matter;

c. removing filtrate from the base of the filter media until substantially such time as breakthrough of the solid matter occurs;

d. stopping steps b. and c.;

e. injecting clarified fluid into the base of the filter media causing the clarified fluid to upflow through the filter media at an upflow velocity sufficient to fluidize and expand the filter media and to carry the accumulated solid matter upwardly into the fluid above the filter media;

f. withdrawing a mixture of fluidized filter media, fluid and accumulated solid matter from the vicinity of the top surface of the fluidized filter media and passing the mixture through a zone of high fluid energy dissipation at a rate sufficient hydraulically to scour accumulated solid matter from the filter media particles;

g. conducting the mixture passing through the zone of high fluid energy dissipation to the base of the filter media effecting a circulatory upward flow of scoured filter media for a period of time sufficient hydraulically to scour accumulated solid matter from substantially all the filter media particles in the filter bed;

h. removing fluid and solid matter from the filter bed above the filter media;

i. clarifying the removed fluid and solid matter;

j. recycling the clarified fluid as in step e; and,

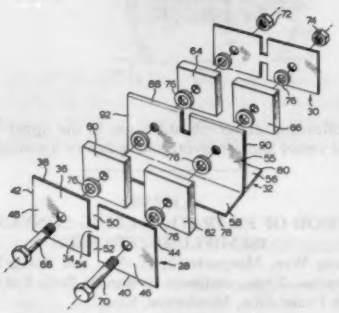
k. stopping steps e. through j, and resuming steps b. and c.

4,157,963

MAGNETIC DEVICE FOR TREATMENT OF CALCAREOUS LIQUIDS

Edward T. Jessop, Islington, and Robert C. Hanson, Weston, both of Canada, assignors to Tengam Company Limited, Etobicoke, Canada

Continuation-in-part of Ser. No. 747,142, Dec. 3, 1976, abandoned. This application May 16, 1978, Ser. No. 906,395
Int. Cl.[2] B01D *35/06*
U.S. Cl. 210—222 **5 Claims**



1. A magnetic device for the treatment of calcareous liquid comprising:

first and second side elements each defining a thin, generally rectangular plate having two major faces, two side edges and two end edges, the plate being divided into two similar component end portions by opposed slot-shaped openings cut from either side edge to define a neck joining said component end portions, each component end portion defining an opening in its centre;

a third element defining an upright centre portion similar to said first and second elements and co-planar horizontal flanges dependent from the lower side edge of said upright centre portion;

four magnets each defining two major polarized faces with an opening through the centre thereof and arranged in pairs in a spaced end-to-end relationship, each pair being positioned symmetrically on opposite sides of the upright centre portion of the third element, with similar polar faces of each magnet centrally facing the component end portion of the upright centre portion of the third element opposite it; and

two fasteners respectively passing through the openings in adjoining component end portions of the side elements and the upright centre portion of the middle element, and the magnets located intermediate these elements to maintain the positions relative to each other.

4,157,964

DUPLEX SEAL FOR A BAG-TYPE FILTER SYSTEM

John W. Rishel, Vicksburg, Mich., assignor to Dover Corporation, Portage, Mich.

Filed Jan. 10, 1978, Ser. No. 868,734
Int. Cl.[2] B01D *29/14*
U.S. Cl. 210—238 **11 Claims**

1. In a filter construction including a filter tank having an open end and a cover securable on said open end, a filter basket and filter liner lining said basket and disposed within said tank for dividing said tank into an unfiltered liquid zone and a filtered liquid zone, inlet conduit means communicating with said unfiltered liquid zone and further conduit means communicating with said filtered liquid zone, and means for centering said filter liner with respect to the filter basket and for sealing both against bypassing of unfiltered liquid around the edge of the filter liner and against leakage of liquid from within the

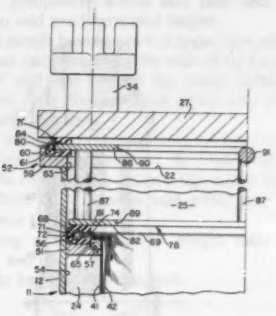
tank between said open end and cover, the improvement comprising:

means defining a hole through the side wall of said tank near said open end for liquid communication between said tank and one of said conduit means;

first and second step defining annuli coaxially fixed to and facing into said tank, said first and second annuli being disposed axially inboard and outboard, respectively of said hole in said side wall;

a first resilient seal around the edge of said liner received snugly in a step of said first annulus and facing toward said second annulus;

a spacer insertable in said open end of said tank, said spacer



having inner surface means engageable with said first resilient seal for axially pressing said first resilient seal firmly against said liner edge and first annulus, said spacer having a free radial edge axially offset from said inner surface means and overlying said second annulus;

a second resilient seal around said free radial edge of said spacer received snugly in a step of said second annulus;

said cover having inner surface means engageable with said second resilient seal for axially pressing said second resilient seal firmly against said free radial edge of said spacer and said second annulus, to thereby press said spacer firmly against said liner edge and first annulus, said spacer including an opening communicating between said hole and said liner.

4,157,965

BLOOD TREATING DEVICE

Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 542,593, Jan. 20, 1975, abandoned. This application Dec. 29, 1975, Ser. No. 644,451

Int. Cl.[2] B01D *29/04*

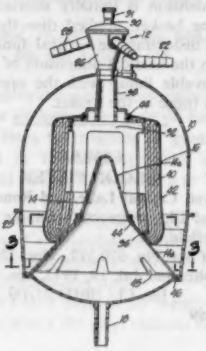
U.S. Cl. 210—305 **7 Claims**

1. A device for receiving and treating blood during surgical procedures, comprising:

a blood receiving housing having blood inlet means positioned at the top thereof and blood outlet means positioned at the bottom thereof and a predetermined blood flow path therebetween;

a defoamer means for removing air bubbles and other foreign matter from the blood interposed in said blood flow path and through which blood flows radially outward, said defoamer means including a layer of defoamer material extending about a defined interior section of said housing into which blood flows from said blood inlet means whereby blood flowing from said interior section to said blood outlet means must pass through said layer of defoamer material; and

blood flow control means including a substantially conical surface positioned within said interior section defined by said layer of defoamer material and about which said layer of defoamer material extends, said apex of said conical surface being closed and positioned below and spaced apart from said blood inlet means said apex being adapted to receive blood from said blood inlet means and along



with said conical surface distribute blood uniformly in substantially a sheet of flow radially outward to said defoamer means and, thereby, prevent the splashing of blood.

4,157,966

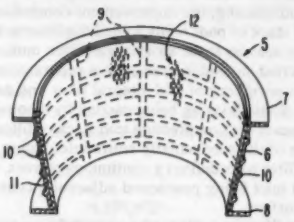
CENTRIFUGE EQUIPMENT

Anthony G. Hassall, Sandiway, England, assignor to Hunter Wire Products Limited, Warners Bay, Australia

Filed Jun. 21, 1977, Ser. No. 808,505

Int. Cl.[2] B01D *33/02*

U.S. Cl. 210—380 R **6 Claims**



1. A centrifuge device comprising a perforate basket container having an inlet, an outlet and a circumferential wall which converges towards the outlet, a urethane plastic liner in unitary sheet form having a vertical dimension which is initially shorter than the vertical dimension of said container and plurality of rows of transversely and longitudinally spaced slits formed therein and stretched transversely sufficiently to make the vertical dimension of said liner coincide with the vertical dimension of said basket and to open said slits to form elongate apertures extending in the direction of the axis of rotation of said device which register with apertures of said container, and means bonding the liner to said wall to provide a wear surface.

2. A centrifuge device for separating one material from another, comprising a cone-shaped basket having a perforate wall and adapted to be mounted for rotation about an axis extending along the axis of said basket; said basket having a continuous perforate wall extending about its inner peripheral surface; fastening means, disposed at a predetermined location along the axis of said basket, for mounting a perforate flexibly resilient unitary plastic sheet material having an initial vertical dimension shorter than the vertical dimension of said basket, internally of said perforate wall by distorting the vertical dimension of said material to coincide with the vertical dimension of said basket, to provide a wear surface having apertures

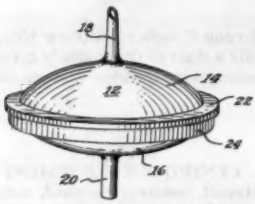
which register with perforations of said wall against which said materials move during rotation of said basket.

3. In a centrifuge device, comprising a perforate basket, a slitted flexible resilient plastic unitary sheet material which in the vertical dimension is initially shorter than the vertical dimension of the basket, applied directly internally to said perforate basket distorting the vertical dimension of said lining to coincide with the vertical dimension of said basket so as to provide a removable lining with the openings in the lining registering with those in the basket.

4,157,967
BLOOD FILTER

Richard P. Meyst, Crystal Lake, and Ronald M. Porten, McHenry, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 670,317, Mar. 25, 1976, abandoned. This application Jul. 19, 1977, Ser. No. 816,987
Int. Cl.[2] B01D *25/00*
U.S. Cl. 210—449 **25 Claims**



1. In a filter for blood and the like including a housing defining an inlet for fluids to be filtered, an outlet for filtered fluid, and a stack of filter pads of thermoplastic fibers positioned within said housing, the improvement comprising, in combination: said stack of pads being joined together at their periphery by a heat seal to form an integral filter unit, said filter unit being carried in said housing by a separate, second seal between the periphery of said integral filter unit and the housing, the inlet of said housing being carried by a housing wall which defines means for compressing said stack of filter pads whereby the shape of the substantially entire inlet-facing surface of said stack of filter pads defines a continuous convex, curved surface with said inlet being positioned adjacent a central area of said convex surface.

23. In a filter including a housing defining an inlet for fluids to be filtered, an outlet for filtered fluid, and a fiber-containing filter pad positioned within said housing, said filter pad being treated with a binder material to provide increased stiffness to the filter pad, the improvement comprising, in combination: the side of said filter pad facing said inlet carrying a quantity of binder material more than that of the side of said filter pad facing said outlet, said quantity being sufficient that said filter pad being compressed in the housing defines a density gradiant across its width with the outlet-facing side of said filter pad being compressed more than said inlet-facing side.

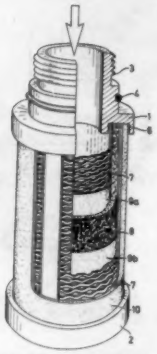
4,157,968
FILTERS

Dirk G. Kronsbein, Düsseldorf, Fed. Rep. of Germany, assignor to Ultrafilter GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,528
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706017
Int. Cl.[2] B01D *25/04, 25/16*
U.S. Cl. 210—489 **4 Claims**

1. A filter element for filtering air, other gases and liquids, comprising a filter medium, a first outlet side and a second inlet side permeable supporting shell, means supporting said second supporting shell inside and in spaced relation from said first supporting shell and supporting said filter medium in the space between said first and second supporting shells, said filter medium having a plurality of layers of different filter gauge comprising an inlet side filter layer adjacent said second supporting shell, an outlet side filter layer adjacent said first supporting shell and an intermediate filter layer located between said inlet side and outlet side filter layers, said intermediate filter layer consists of binder-free glass microfibre fleece of substantially 0.2μ and said inlet side and outlet side filter layers consist of binder-free supporting nylon fibre fleece greater than 0.2μ.

4. A filter element for filtering compressed air to remove oil and other impurities comprising, a filter medium, said filter medium having three layers of filter medium of different gauge

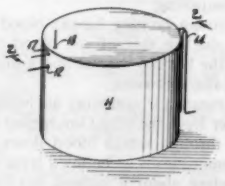


arranged symmetrically, the middle layer being of a finer filter gauge and the other two layers being of a coarser gauge, said middle layer consisting of a binder-free glass microfibre fleece of substantially 0.2μ and said other two layers each consisting of a fleece of nylon fibres greater than 0.2μ; a first and a second rigid, permeable cylindrical supporting shell; means supporting said second supporting shell radially inwardly within said first supporting shell and supporting said filter medium in the space defined between said first and second supporting shells; and, a jacket of foamed plastic material surrounding said first supporting shell, whereby said foam jacket captures any liquid aerosols entrained with said compressed air flowing through said medium.

4,157,969
SETTLING TANK STRUCTURE

Howard J. Thies, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,543
Int. Cl.[2] B01D *17/04*
U.S. Cl. 210—521 **1 Claim**



1. Settling tank structure for oil and water mixtures, comprising

an elongated tank having an inlet for said mixture at one end and a first outlet for said water at the other end,

the walls of said tank having a predetermined short height for holding a predetermined quantity of said mixture for settling,

said wall height being short enough to minimize the vertical migration distance of minute oil particles,
said first outlet including means for maintaining static liquid level in said tank at a predetermined height therein,
said inlet being located near the top of said wall height,
said first outlet being located near the bottom of said wall height,
a second outlet for oil located at said other end and above said inlet near the top of said wall height, and
baffle means for avoiding channeling of said oil and water mixture from said one end to the other, comprising
at least two parallel adjacent panels oriented transversely to the flow of said oil and water mixture and extending transversely completely across said tank and from the bottom up to said predetermined height,
the first of said panels having rows of appertures which have diameters that decrease from the ends of said panel at the side walls of said tank toward the center thereof for restricting fluid flow through said panel near the center more than near the ends,
the second of said panels having rows of apertures which have diameters that increase from the ends of said panel at the side walls of said tank toward the center thereof for restricting fluid flow through said panel near the ends more than near the center,
said tank having a length to wall height ratio of about twenty-five, and
said wall height being about four feet.

4,157,970

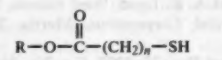
SYNTHETIC AIRCRAFT TURBINE OIL

Roberta Yaffe, Glenham, and Russell R. Reinhard, Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,985
Int. Cl.[2] 252 *48.6*; C10M *1/48*
U.S. Cl. 252—46.7 **10 Claims**

1. A synthetic lubricating oil composition consisting of a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol or a polypentaerythritol or trimethylolpropane and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule, and:

(a) from about 0.3 to 5 percent by weight of the lubricating oil composition of a phenylnaphthylamine or an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms,
(b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms,
(c) from about 0.01 to 0.5 percent by weight of a polyhydroxy-substituted anthraquinone,
(d) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms, and
(e) from about 0.01 to about 5.0 percent by weight of an organic sulfur containing compound represented by the formula



wherein R is a straight or branched chain alkyl radical having from about 4 to about 12 carbon atoms therein, and n is 1 or 2.

2. A lubricating oil composition as claimed in claim **1** wherein said organic sulfur containing compound is a C_6-C_{10} alkyl thioglycolate.

3. A lubricating oil composition as claimed in claim **1** wherein said organic sulfur containing compound is a C_6-C_{10} alkyl thiopropionate.

4,157,971

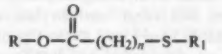
SYNTHETIC AIRCRAFT TURBINE OIL

Roberta Yaffe, Glenham, and Russell R. Reinhard, Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,986
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—46.7 **10 Claims**

1. A synthetic lubricating oil composition consisting of a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol or a polypentaerythritol or trimethylolpropane and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule, and:

(a) from about 0.3 to 5 percent by weight of the lubricating oil composition of a phenylnaphthylamine or an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms,
(b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms,
(c) from about 0.01 to 0.5 percent by weight of a polyhydroxy-substituted anthraquinone,
(d) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms, and
(e) from about 0.01 to about 1.0 percent by weight of an alkyl thioacid ester compound represented by the formula



wherein R and R_1 each represents a straight chain or branched chain alkyl radical containing from 4 to 20 carbon atoms and n is 1 or 2.

2. A lubricating oil composition as claimed in claim **1** wherein said alkyl thioacid ester compound is 2-hexylthioisooctyl glycolate.

3. A lubricating oil composition as claimed in claim **1** wherein said alkyl thioacid ester compound is 3-hexylthioisooctylpropionate.

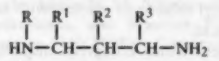
4,157,972

MULTIPURPOSE LUBRICATING OIL ADDITIVE AND COMPOSITIONS CONTAINING SAME

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

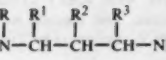
Continuation-in-part of Ser. No. 610,761, Sep. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 431,831, Jan. 9, 1974, abandoned. This application Oct. 26, 1977, Ser. No. 845,700
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—51.5 A **10 Claims**

1. The composition prepared by reacting ethylenediamine tetraacetic acid or nitrilotriacetic acid with a compound of the formula



wherein each of R, R^1, R^2 and R^3 represents hydrogen or hydrocarbyl, said reaction being carried out at a temperature of 150° to 250° C. for 10 to 100 hours and wherein said composition contains a tetrahydropyrimidine.

10. A process for the production of an additive containing a tetrahydropyrimidine for lubricating oils which comprises contacting ethylenediamine tetraacetic acid or nitrilotriacetic acid with a compound of the formula



wherein R, R^1, R^2 and R^3 independently represent hydrogen or hydrocarbyl of 1 to 50 carbon atoms, at a temperature of about 150° to 250° C. for a period of about 10 to about 100 hours.

4,157,973

COPOLYMER COMPOSITIONS AND METHOD OF PREPARATION

Jean P. Montillier, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 470,090, May 15, 1974, abandoned, which is a division of Ser. No. 396,447, Sep. 12, 1973, Pat. No. 3,860,552. This application Mar. 15, 1976, Ser. No. 667,250

Int. Cl.² G03G *9/12*

U.S. Cl. 252—62.1 L **4 Claims**

1. A liquid toner composition for use in electrostatic printing having no dispersing agent for maintaining polymeric material as discrete particles, comprising:

a stable non-aqueous dispersion of a random copolymer having a molecular weight between 80,000 and 500,000 and comprised of a low molecular weight unsaturated ester selected from the group consisting of vinyl acetate, vinyl propionate, methyl acrylate, ethyl acrylate, methyl methacrylate, and ethyl methacrylate and at least one copolymerizable long chain C_6 to C_{20} aliphatic ethylenically unsaturated monomer selected from the group consisting of long chain acrylic, methacrylic and vinyl esters, the ratio of said low molecular weight ester to said long chain monomer being from 95:5 to 50:50 weight percent in an isoparaffinic hydrocarbon having a KB number between 25 and 30, an electrical resistivity of at least 10^9 ohm centimeters, a

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4,157,974

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER AND PROCESS FOR THE MANUFACTURE THEREOF

Alfred Brechlin, and Heinz Herrmann, both of Wiesbaden-Biebrich, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 734,940, Oct. 22, 1976, abandoned, which is a continuation of Ser. No. 483,883, Jun. 27, 1974, abandoned. This application Feb. 15, 1978, Ser. No. 878,095

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1973, 2333064

Int. Cl.² G03G *9/12*

U.S. Cl. 252—62.1 L **10 Claims**

1. In the process for the preparation of a liquid developer for use in a toner image transfer process for developing electrostatic images which comprises preparing a homogeneous particulate mixture of at least one pigment and at least one copolymer of vinyl toluene or styrene with an ester of acrylic or methacrylic acid,

the improvement which comprises dispersing and grinding the mixture in an electrically insulating carrier liquid composed of an aliphatic hydrocarbon or a mixture of aliphatic hydrocarbons having a boiling point or boiling range in the range of 120° to 200° C. in the absence of an additional solvent for the polymer, at a temperature in the range of about 50°–150° C. at which temperature the polymer of the mixture is appreciably soft, and continuing grinding the resulting mixture as it cools to room temperature.

4,157,975

ELECTRICAL INSULATORS HAVING INCREASED RESISTANCE TO PARTIAL DISCHARGES

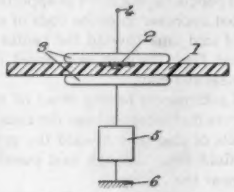
Jean Barge, Paris la Defense; Raymond Catte, Lacq; Gilbert Chapelet, Symphorien d'Ozon; Ai Bui, Toulouse; Pierre Dejean, Sens; Claude Huraux, and Christian Mayoux, both of Toulouse, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Continuation of Ser. No. 588,209, Jun. 19, 1975, abandoned. This application Jun. 17, 1976, Ser. No. 697,063

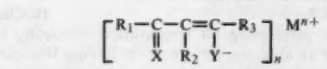
Claims priority, application France, Jun. 21, 1974, 74 21778

Int. Cl.² H01B *3/30, 3/40, 3/42*

U.S. Cl. 252—63.5 **22 Claims**



1. An electrical insulator formed of a void-containing macromolecular polymer for use under voltages capable of causing partial discharges in said voids, said macromolecular polymer being a polyethylene, a polyester or a polyepoxide, the improvement, for promoting an increase of the voltage thresholds liable to cause said partial discharges, wherein said insulator comprises at least one metal chelate which is a derivative of an enolate or thioenolate of the formula



wherein

R_1, R_2 and R_3 are each hydrogen or an alkyl, aryl, or cycloalkyl group or a heterocyclic group containing sulphur, oxygen or nitrogen as the heterocyclic atom and wherein said group may be substituted by one or more halogen atoms;

the total number of carbon atoms in the metal chelate is between 5 and 25;

M^{n+} stands for a metal ion,

X and Y are independently oxygen or sulfur, and

n is an integer from 1 to 4.

4,157,976

CONSTANT BOILING MIXTURES OF 1,1,1,2-TETRAFLUOROCHLOROETHANE AND CHLOROFLUOROMETHANE

Robert L. Ostrozynski, Williamsville; Sabatino R. Orfeo, Orchard Park, both of N.Y.; Philip E. Jones, Basking Ridge, N.J., and Earl A. E. Lund, West Seneca, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 27, 1977, Ser. No. 864,365

Int. Cl.² C09K *5/04*

U.S. Cl. 252—67 **3 Claims**

1. Constant boiling mixtures consisting essentially of about 38.5–99.5 weight percent of 1,1,1,2-tetrafluorochloroethane and about 0.5–61.5 weight percent of chlorofluoromethane.

3. The process of producing refrigeration which comprises condensing a constant boiling mixture as described in claim 1 and thereafter evaporating said mixture in the vicinity of a body to be cooled.

4,157,977

DETERGENT-GERMICIDE COMPOSITIONS

Norman E. Dewar, and Said I. Razig, both of St. Louis, Mo., assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 630,868, Nov. 11, 1975, abandoned, which is a continuation of Ser. No. 485,184, Jul. 2, 1974, abandoned, which is a continuation of Ser. No. 11,328, Feb. 13, 1970, abandoned. This application Oct. 27, 1976, Ser. No. 735,995

The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.

Int. Cl.[2] **C11D** *3/48, 7/08*

U.S. Cl. 252—106 **10 Claims**

1. A detergent germicide composition which consists essentially of from about 2.4 to about 30 parts by weight of an antimicrobial active phenolic derivative in combination with from about 1 to about 36 parts by weight of hydroxyacetic acid; and from about 2 to about 30 parts by weight of a detergent surfactant; said antimicrobial active phenolic derivative being selected from the group consisting of o-phenylphenol, o-benzyl-p-chlorophenol, o-cyclopentyl-p-chlorophenol, 4-chloro-2-phenylphenol, 6-chloro-2-phenylphenol, p-tertiary-amylphenol, p-tertiary-butylphenol, 2,2-methylene-bis-(2,4,6-trichlorophenol), p-chloro-m-xylenol, and dichlorom-xylenol; said detergent surfactant being represented by the general formula:

$$R_1—CHO(CH_2CHO)_nMX$$
(with R_2 and R_3 substituents on the CH_2CHO group)

where:

M is sulfate or phosphate;

R_1 is a hydrocarbon alkyl group containing 1 to about 20 carbon atoms;

R_2 is hydrogen or a hydrocarbon alkyl group containing 1 to about 20 carbon atoms;

The sum of carbon atoms in R_1 and R_2 is not greater than about 20;

R_3 is hydrogen or methyl;

n is a positive number having an average value of from 0.5 to about 20; and

X is hydrogen, alkali metal, ammonium, or triethanolamine.

4,157,978

MODIFIED SILICATES

Ramon A. Llenado, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 13, 1978, Ser. No. 885,932

Int. Cl.[2] **C07F** *7/02;* **C11D** *3/08, 3/20, 11/04*

U.S. Cl. 252—135 **50 Claims**

1. The compound

$$M_{(0-1)}[O(—\underset{\displaystyle OM}{\overset{\displaystyle OM}{\underset{|}{\overset{|}{Si}}}}—O)_n](TR_2)_{(1-2)}$$

wherein each M is selected from the group consisting of Na, K, H and mixtures thereof; n is the degree of polymerization and ranges from about 2 to about 1,000; T is selected from the group consisting of Al, Ti, Zn, Zr, Sn, V, Mo, W, Se, Ge and mixtures thereof, R is an acyl group containing from about 2 to about 30 carbon atoms and from 0 to about 5 additional carboxylate groups.

20. A spray dried detergent composition containing from about 3% to about 50% of a detergent surfactant; from about 1% to about 40% of a capped alkali metal silicate; and from about 5% to about 96% of a detergency builder other than said capped silicate wherein said capped silicate has the formula

$$M_{(0-1)}[O(—\underset{\displaystyle OM}{\overset{\displaystyle OM}{\underset{|}{\overset{|}{Si}}}}—O)_n](TR_2)_{(1-2)}$$

wherein each M is selected from the group consisting of Na, K, H and mixtures thereof; n is the degree of polymerization and ranges from about 2 to about 1,000; T is selected from the group consisting of Al, Ti, Zn, Zr, Sn and mixtures thereof, R is an acyl group containing from about 2 to about 30 carbon atoms and from 0 to about 5 additional carboxylic groups.

4,157,979

AZEOTROPIC COMPOSITIONS

Harold C. Walters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 7, 1978, Ser. No. 894,285

Int. Cl.[2] **C11D** *7/30*

U.S. Cl. 252—162 **3 Claims**

1. A boiling admixture which at substantially atmospheric pressure is characterized as from about 30 to about 35 weight percent n-butane, from about 62 to about 66 weight percent 1,1,1,2,3,3,4,4,4-nonafluoro-n-butane and from about 1 to about 5 weight percent 1,1,2,2,3,3,4,4,4-nonafluoro-n-butane.

4,157,980

HYDROSULFITE PREPARATION

Jack A. Tiethof, South Plainfield, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 724,390, Sep. 17, 1976, abandoned. This application Apr. 14, 1978, Ser. No. 896,170

Int. Cl.[2] **C01B** *17/66*

U.S. Cl. 252—188 **10 Claims**

1. A process for producing aluminum hydrosulfite liquor which comprises mixing particulate aluminum metal free from a mercury or magnesium alloy with an aqueous solution of hydrochloric acid having a concentration within the range of 2 M to 13 M and used in amount in excess of that required to dissolve the surface oxide coating on the aluminum, said amount of hydrochloric acid solution being limited to that which will totally wet the surface of said particulate aluminum and form a slurry capable of being mixed, maintaining said aluminum and said acid solution in contact until vigorous evolution of hydrogen gas occurs, thereby activating said aluminum metal, and without separating the aluminum metal from the acid solution, mixing the activated aluminum metal with an aqueous solution of sulfur dioxide of 2 to 12% concentration, said solution of sulfur dioxide being at a temperature of 20° C. or below and being used in relative proportion such as to provide in excess of 1 mole Al per 3 moles SO_2, and vigorously agitating said mixture for 5 to 10 minutes at a pH below 3, and at a temperature of 0° to 10° C., thereby producing aluminum hydrosulfite liquor.

4,157,981

METHOD OF PRODUCING A LUMINESCENT ALKALINE EARTH METAL FLUOROHALIDE ACTIVATED BY BIVALENT EUROPIUM

Albert L. N. Stevels; Agnes D. M. Schrama-de Pauw, both of Eindhoven, Netherlands, and Francois Pingault, Amiens, France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 763,048, Jan. 27, 1977, abandoned, which is a continuation of Ser. No. 618,214, Sep. 30, 1975, abandoned. This application Apr. 3, 1978, Ser. No. 893,063

Claims priority, application Netherlands, Oct. 1, 1974, 7412917

Int. Cl.[2] **C09K** *11/46*

U.S. Cl. 252—301.4 H **7 Claims**

1. A method for the preparation of a bivalent europium

activated luminescent alkaline earth metal fluorohalide of the formula $Me_{1-p}Eu_pFX$ where Me is at least one alkaline earth metal selected from the group consisting of Ba and Sr, up to 20 mole percent of Me being replaceable by Ca, X is at least one halogen selected from the group consisting of Cl, Br and I and $0.001 \leqq p \leqq 0.20$, comprising forming an aqueous suspension of MeF_2 and an equimolar amount of MeX_2 in dissolved form per mole of MeF_2, evaporating said suspension to dryness at a temperature of 50° C. to 250° C., mixing the resultant MeFX product with p moles of EuX_3 per mole of MeFX product, heating the resultant dried mixture in a weakly reducing atmosphere of nitrogen and a small amoun⁺ of hydrogen for effectively reducing trivalent europium to bivalent europium, at a temperature of 600° C. to 1000° C., and then, after cooling, heating the resultant bivalent europium activated alkaline earth metal fluorohalide, in an inert atmosphere, at a temperature of 600° C.–850° C.

4,157,982

DISPERSED ROSIN

E. Dale Clemons, Clayton, and John T. Daust, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 386,242, Aug. 6, 1973, abandoned. This application Jul. 24, 1975, Ser. No. 598,970

Int. Cl.² B01J *13/00*

U.S. Cl. 252—311 **10 Claims**

1. A process which comprises emulsifying an immiscible mixture consisting of molten rosin, alkali metal alkyl benzene sulfonate and water while maintaining the mixture at a temperature above the temperature of the molten rosin; and thereafter cooling the emulsion to a temperature below about 100° C. at a rate sufficiently rapid to prevent precipitation of the solid rosin from the emulsion.

4,157,983

PROCESS FOR PRODUCTION OF ENCAPSULATED WATER-DISPERSIBLE MATERIALS

Ronald Golden, Louisville, Ky., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 28, 1977, Ser. No. 819,830

Int. Cl.² B01J *13/02;* A01N *17/00;* A61K *9/58*

U.S. Cl. 252—316 **10 Claims**

1. A process for encapsulation of water-dispersible material comprising preparing an admixture comprising:

(a) low HLB emulsifier;

(b) oily water-immiscible solvent for said emulsifier;

(c) urea-formaldehyde prepolymer;

(d) said water-dispersible material; and

(e) water;

agitating said admixture to form a water-in-oil emulsion, adding amphiphatic acidic catalyst to said emulsion to cure said prepolymer and then separating the resultant, solid urea-formaldehyde capsules containing water-dispersible material.

4,157,984

ANTIOXIDANTS, ANTIOXIDANT COMPOSITIONS AND METHODS OF PREPARING AND USING SAME

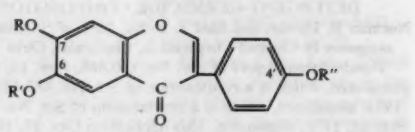
Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited, Janesville, Wis.

Filed Jun. 8, 1977, Ser. No. 804,594

Int. Cl.² C09K *15/06*

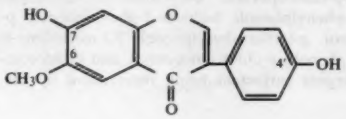
U.S. Cl. 252—407 **9 Claims**

1. An antioxidant composition consisting essentially of at least two compounds having the structure:



wherein each of R, R′ and R″ may be a methyl group or hydrogen or wherein R and R′ are replaced by CH_2 to form the linkage

provided that one of said compounds has the structure:



said compounds being present in amounts such that the amount of one compound relative to another is in the range 1:5 to 5:1.

4,157,985

CHEMICAL CONVERSION METHOD

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 660,207, Feb. 23, 1976, Pat. No. 4,081,249. This application Jan. 5, 1978, Ser. No. 867,063

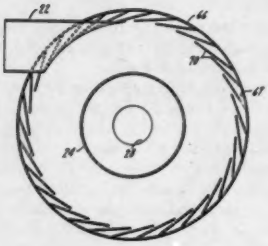
Int. Cl.² B01J *21/20, 29/38, 23/90*

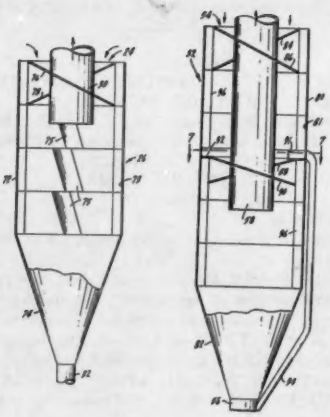
U.S. Cl. 252—417 **10 Claims**

1. In a method for restoring the catalytic activity of solid particles which have previously been used to promote hydrocarbon conversion and have deactivating carbonaceous deposit material thereon, the major portion by weight of said solid particles having diameters in the range from about 10 microns to about 500 microns, wherein in a regeneration zone said deposit-containing solid particles are contacted with oxygen-containing vapor at conditions to combust at least a portion of said deposit material and form a mixture of solid particles and vapor, the improvement which comprises contacting said deposit-containing solid particles with said oxygen-containing vapor and separating at least a portion of said solid particles from said mixture in a separation means comprising a chamber defined by an interior cylindrical surface; an inlet means to said chamber in fluid communication with both said regeneration zone and said chamber to allow entry of said mixture to said chamber, said inlet means being situated so that the movement of said mixture in said chamber causes solid particles to preferentially move toward said cylindrical surface; a fluid outlet means in fluid communication with said chamber to allow at least a portion of said vapor of said mixture to exit from said chamber; and a particle outlet means in fluid communication with said chamber to allow at least a portion of said solid particles to exit from said chamber; the improvement which comprises:

arresting means located in spaced relation to said interior cylindrical surface to slow the velocity of at least a portion of said solid particles as said solid particles preferentially move toward said cylindrical surface, thereby inhibiting the attrition of said solid particles.

7. In a method for restoring the catalytic activity of solid particles which have previously been used to promote hydrocarbon conversion and have deactivating carbonaceous deposit material thereon, the major portion by weight of said solid particles having diameters in the range from about 10 microns to about 500 microns, wherein in a regeneration zone said deposit-containing solid particles are contacted with oxygen-containing vapor at conditions to combust at least a portion of said deposit material and form a mixture of solid particles and vapor, the improvement which comprises contacting





said deposit-containing solid particles with said oxygen-containing vapor and separating at least a portion of said solid particles from said mixture in a separation means comprising a chamber defined by an interior cylindrical surface; an inlet means to said chamber in fluid communication with both said regeneration zone and said chamber to allow entry of said mixture to said chamber, said inlet means being situated so that the movement of said mixture in said chamber causes solid particles to preferentially move toward said cylindrical surface; a fluid outlet means in fluid communication with said chamber to allow at least a portion of said vapor of said mixture to exit from said chamber; and a particle outlet means in fluid communication with said chamber to allow at least a portion of said solid particles to exit from said chamber; the improvement which comprises:

at least one flow reversal means as a component of said inlet means to substantially change the direction of flow of said mixture prior to said mixture entering said chamber to thereby cause at least a portion of said solid particles to be separated from said mixture prior to said mixture entering said chamber, thereby inhibiting the attrition of said solid particles.

9. In a method for restoring the catalytic activity of solid particles which have previously been used to promote hydrocarbon conversion and have deactivating carbonaceous deposit material thereon, the major portion by weight of said solid particles having diameters in the range from about 10 microns to about 500 microns, wherein in a regeneration zone said deposit-containing solid particles are contacted with oxygen-containing vapor at conditions to combust at least a portion of said deposit material and form a mixture of solid particles and vapor, the improvement which comprises contacting said deposit-containing solid particles with said oxygen-containing vapor and separating at least a portion of said solid particles from said mixture in a separation means comprising a chamber defined by an interior cylindrical surface; an inlet means to said chamber in fluid communication with both said regeneration zone and said chamber to allow entry of said mixture to said chamber, said inlet means being situated so that the movement of said mixture in said chamber causes solid particles to referentially move toward said cylindrical surface; a fluid outlet means in fluid communication with said chamber to allow at least a portion of said vapor of said mixture to exit from said chamber; and a particle outlet means in fluid communication with said chamber to allow at least a portion of said solid particles to exit from said chamber; the improvement which comprises:

at least one plate means located in spaced relation to said interior cylindrical surface between said inlet means and said particle outlet means for collecting at least a portion of said solid particles separated from said mixture in said separation means upstream from said plate means and transport means in fluid communication with said plate means for transporting at least a portion of said solid particles collected by said plate means from said separation means.

4,157,986

ABRASION RESISTANT CATALYST

Harry Danziger; Otto Immel; Bernd-Ulrich Kaiser; Hans-Helmut Schwarz, and Eberhard Bandtel, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 9, 1977, Ser. No. 832,012

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641389

Int. Cl.[2] **B01J** *21/02;* **C07D** *210/00*

U.S. Cl. 252—432 **3 Claims**

1. A process for the preparation of a catalyst granulate, which comprises mixing carbon black, boric acid, water and from 3 to 50% by weight, based on the total weight, of a finely divided boric acid-carbon black catalyst which has previously been used for the preparation of caprolactam from cyclohexanone oxime and forming a granulate from the resulting mixture.

4,157,987

CATALYST COMPOSITIONS ESPECIALLY USEFUL FOR PREPARATION OF UNSATURATED ACIDS

Serge R. Dolhyj, Parma, and Ernest C. Milberger, Solon, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 507,499, Sep. 20, 1974, abandoned, which is a division of Ser. No. 409,693, Oct. 25, 1973, abandoned. This application Apr. 24, 1978, Ser. No. 899,192

Int. Cl.[2] B01J *27/14, 29/16, 23/10*

U.S. Cl. 252—437 6 Claims

1. A catalyst composition consisting of oxides or oxide complexes of cerium, tungsten, vanadium and molybdenum plus optionally one or more of Co, Ni, Zn, Cu, Mg, Mn, Bi, Ti, Zr, Sn, P, an alkali metal an alkaline earth metal or an element of the lanthanoid series.

4,157,988

METHOD AND COMPOSITION FOR REMOVING SULFUR DIOXIDE FROM FLUE GASES

Leopold Pessel, Wyndmoor, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Division of Ser. No. 678,291, Apr. 19, 1976, Pat. No. 4,091,075, which is a continuation-in-part of Ser. No. 545,928, Jan. 31, 1975, Pat. No. 4,070,441. This application Jul. 18, 1977, Ser. No. 816,293

Int. Cl.[2] B01J *27/02;* C01B *17/00*

U.S. Cl. 252—440 7 Claims

1. An aqueous scrubbing fluid for removing sulfur dioxide from flue gas by scrubbing the gas and capable of being subsequently regenerated by the oxidizing action of air, said fluid consisting essentially of ferric sulfate, aluminum sulfate, and water, said ferric sulfate providing in excess of 0.6% by weight of ferric ions, and said aluminum sulfate providing not less than 0.05% by weight of aluminum ions.

4,157,989

SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 833,332, Sep. 14, 1977. This application May 18, 1978, Ser. No. 907,240

Int. Cl.[2] B01J *27/08, 27/10, 23/36*

U.S. Cl. 252—441 16 Claims

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,157,990

LUBRICATING AND ANTI-TACK COMPOSITIONS USEFUL IN THE SHAPING OF THERMOPLASTICS CONTAINING MIXED ESTERS AND ESTERS OF C_{32-72} MONOALCOHOLS WITH C_{18-72} MONOACIDS

Robert A. Lindner, Newburgh, N.Y., and Edwin M. Smolin, Kinnelon, N.J., assignors to Henkel Inc., Teaneck, N.J.

Continuation of Ser. No. 656,810, Feb. 10, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,487

Int. Cl.[2] C10M *1/24*

U.S. Cl. 252—56 S 9 Claims

1. A lubricant-antitack composition useful in the shaping of thermoplastic material, comprising a mixture of

(A) mixed esters with hydroxyl and acid numbers of 0 to 6 of

(a) alkane polyols having 2 to 6 hydroxyl groups and 2 to 10 carbon atoms,

(b) dicarboxylic acids selected from the group consisting of aliphatic hydrocarbon dicarboxylic acids having 2 to 22 carbon atoms, cycloalkane dicarboxylic acids of 5 to 10 carbon atoms, and aromatic hydrocarbon dicarboxylic acids of 8 to 14 carbon atoms, and

(c) aliphatic hydrocarbon monocarboxylic acids having 12 to 30 carbon atoms, in an average molar ratio of $(n-1):n:nm-2(n-1)$, wherein n is an integer of from 2 to 11 and m is an integer of from 2 to 6, said mixed esters having a molecular weight of at least 524, and

(B) esters of aliphatic monofunctional alcohols having 32 to 72 carbon atoms with aliphatic hydrocarbon monocarboxylic acids having 18 to 72 carbon atoms;

the weight ratio of (A) to (B) being 9:1 to 1:3.

4,157,991

CORROSION PREVENTIVE COMPOSITION

Gabriel J. Pilla, Pennsauken, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1978, Ser. No. 894,771

Int. Cl.[2] C09D *3/66, 5/08*

U.S. Cl. 260—22 S 13 Claims

1. A corrosion preventive composition for use in coating metallic surfaces with a clear, flexible, non-tacky film particularly resistant to abrasion, comprising:

film-forming agents including a silicone alkyd resin having a solids content of about 50 weight percent, a minimum phthalic anhydride content of about 20 weight percent, and a minimum oil content of about 25 weight percent, a silicone resin having an abundance of terminal hydroxyl groups and a solids content of about 60 weight percent dissolved in xylene, and a silicone varnish having a solids content of about 10 weight percent dissolved in toluene-petroleum spirits;

corrosion inhibitors including a high molecular weight petroleum sulfonate and an alkyl ammonium alkyl phosphate;

solvents including an aromatic hydrocarbon and trichlorotrifluoroethane; and

a coupling agent consisting essentially of isopropyl alcohol.

4,157,992

ELASTOMERIC BLEND COMPOSITIONS HAVING IMPROVED WEATHERING STABILITY

Robert D. Lundberg, Bridgewater, and Robert R. Phillips, Spring Lake Heights, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 29, 1977, Ser. No. 855,773

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—23.5 A 22 Claims

1. An elastomeric blend composition which consists essentially of:

(a) a neutralized sulfonated elastomeric polymer having about 15 to about 50 meq. neutralized sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer, said neutralized sulfonate groups containing a counterion selected from the group consisting of ammonium, antimony, aluminum, iron, and a metal of Groups IA, IIA, IB and IIB of the Periodic Table of Elements and mixtures thereof;

(b) about 5 to about 100 parts by weight of a non-polar process oil per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said non-polar process oil having less than about 2 weight % polar-type compounds;

(c) about 25 to about 200 parts by weight of at least one inorganic filler per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said inorganic filler being selected from the group consisting of aluminum silicate, talc, calcium silicate, calcium carbonate, and magnesium silicate and mixtures thereof, a ratio of said inorganic filler to said non-polar process oil being from about 1 to about 5;

(d) about 1 to about 50 parts by weight of a carbon black having a particle size of about 0.02 to about 0.5 microns per 100 parts by weight of said neutralized sulfonated elastomeric polymer, a ratio of said inorganic filler to said carbon black being from about 150:1 to about 0:1; and

(e) about 5 to about 60 parts by weight of a preferential plasticizer per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said preferential plasticizer being a combination of a carboxylic acid having about 5 to about 30 carbon atoms and a basic salt of said carboxylic acid wherein a metal ion of said basic salt is selected from the group consisting of lead, antimony, aluminum and metals of Groups IA, IB, IIA, and IIB of the Periodic Table of Elements and mixtures thereof.

4,157,993

RESIN-COATED SAND COMPOSITIONS

Kyohei Funabiki; Noriaki Matsushima, and Naomitsu Inoue, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Dec. 22, 1977, Ser. No. 863,546
Claims priority, application Japan, Dec. 23, 1976, 51/154294
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—28 P **15 Claims**

1. In the process for preparation of a composition useful as a foundry core or mold consisting essentially of sand and a phenolic resin wherein a mixture of the phenolic resin consisting of solid particles and sand at an elevated temperature sufficient to fluidize said solid resin are mulled to coat the sand with said resin, the improvement wherein the solid phenolic resin comprises a solid novolac phenolic resin and a lubricant-containing solid resole phenolic resin produced by the reaction comprising condensation of a phenol and a formaldehyde source followed by dehydration of the reaction mixture wherein the lubricant is added prior to or during said reaction to produce the solid resole phenolic resin, the novolac resin constituting about 1 to about 40 parts by weight per 100 parts by weight of the phenolic resin, and the lubricant-containing resole phenolic resin constituting the balance of the phenolic resin component, the proportion of the total phenolic resin being about 2 to about 5 parts by weight per 100 parts by weight of the sand and the proportion of lubricant in the resole resin component being about 0.5 to about 10 parts by weight per 100 parts by weight of the resole resin component.

2. The process of claim 1 wherein the lubricant is selected from the group consisting of carnauba wax, montan wax, paraffin wax, polyethylene wax, aliphatic amides, rosin, a complex thermoplastic mixture derived from southern pinewood comprising phenolic constituents in the form of substituted phenolic ethers, polyphenols and phenols of high molecular weight, polyethyleneglycol, polystyrene, talc, and mixtures thereof.

3. The process of claim 2 wherein the lubricant is an aliphatic amide or a polyethylene wax.

4,157,994

LOW TEMPERATURE BAKE WATER REDUCIBLE ACRYLIC ENAMEL

Stuart M. Totty, Maumee, and James A. Meier, Waterville, both of Ohio, assignors to Inmont Corporation, Clifton, N.J.

Filed Sep. 16, 1977, Ser. No. 833,770
Int. Cl.[2] C08L *61/20*
U.S. Cl. 260—29.4 UA **9 Claims**

1. A water-reducible acrylic enamel coating composition comprising a substantially uniform mixture of a vehicle comprising a nonvolatile binder and a solvent, said binder comprising:

(1) about 25% to about 40% of a water miscible partially etherified melamine formaldehyde resin containing from about 10% up to about 30% methylol groups,

(2) about 60% to about 75% of an acrylic copolymer having a Tg of about −10° C. to about 45° C., a molecular weight of about 2,000 to about 100,000 and comprising the copolymerization product of:

(a) about 3% to about 8% of an α, β unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof;

(b) about 10% to about 30% of a hydroxy functional monomer selected from the group consisting of hydroxy C_2 to C_4 alkylacrylate, hydroxy C_2 to C_4 alkyl methacrylate and mixtures thereof, and

(c) about 62% to about 87% of a nonfunctional monomer selected from the group consisting of acrylonitrile, styrene, C_1 to C_{12} alkyl acrylates, C_1 to C_{12} alkyl methacrylates and mixtures thereof, said acrylic copolymer further characterized as having the carboxyl group thereof substantially neutralized with a tertiary amine solubilizing agent to an extent sufficient to provide a pH of about 7 to about 12 and to impart hydrophilic properties to said copolymer, said solvent comprising a mixture of a water-miscible organic solvent and water, said coating composition characterized as capable of being substantially completely cured at a temperature of about 250° F.

4,157,995

PAPER COATING COMPOSITION CONTAINING A PIGMENT, A POLYMER IN THE FORM OF AN AQUEOUS DISPERSION AND ANOTHER POLYMER WHICH IS SOLUBLE IN WATER

Hans-Uwe Schenck, Wachenheim, and Guenter Hirsch, Mutterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,671
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703418; Dec. 2, 1977, 2753693
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 RW **5 Claims**

1. An improved paper coating composition containing, per 100 parts by weight of finely divided pigment, from 5 to 25 parts by weight, expressed as solids, of a polymer A having a glass transition temperature of from −40° to +50° C. in the form of an aqueous dispersion and from 0.1 to 10 parts by weight of a high molecular weight polymer B which is soluble in water, wherein the improvement consists in producing the polymer B by polymerizing at least one water-soluble ethylenically unsaturated monomer in a water-in-oil emulsion.

4,157,996

COATING SOLUTION OF POLYETHERIMIDE-FORMING MONOMERS

Edith M. Boldebuck, Schenectady, and Eugene G. Banucci, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 18, 1977, Ser. No. 778,858
Int. Cl.[2] C08G *69/02, 69/26*
U.S. Cl. 260—30.2 **18 Claims**

1. A highly concentrated homogeneous coating solution of monomeric bis(ether dicarboxylic acid) and diamine reactants, comprising

(1) at least one aromatic bis(ether dicarboxylic acid) selected from the group consisting of 2,2-bis[4-(3,4-dicarboxyphenoxy)phenyl] propane; 2,2-bis[4-(2,3-dicarboxyphenoxy)phenyl] propane; 4-(2,3-dicarboxyphenoxy)-4'-(3,4-dicarboxyphenoxy)diphenyl-2,2-propane; and mixtures thereof;

(2) at least one organic diamine selected from the group consisting of 4,4'-methylenedianiline, 4,4'-oxydianiline, m-phenylenediamine, and mixtures thereof; and

(3) an organic solvent selected from the group consisting of monoalkyl ethers of ethylene glycol having from 1 to 4 carbon atoms in the alkyl group, monoalkyl ethers of diethylene glycol having from 1 to 4 carbon atoms in the alkyl group, dipolar aprotic organic solvents selected from the group consisting of N-methyl-2-pyrrolidone, N,N-dimethylacetamide, dimethylsulfoxide, tetramethylurea, and mixtures thereof;

said bis(ether dicarboxylic acid) and said diamine being dissolved in said organic solvent in a combined amount of

at least 0.67 part by weight per one part by weight of said organic solvent,

said diamine being dissolved in an amount from about 0.5 to about 2.0 moles per mole of said bis(ether dicarboxylic acid), said solution remaining homogeneous for at least one week when stored at about 20° C. to 30° C. in a tightly stoppered glass container.

4,157,997

POLYALKYLENE TEREPHTHALATE AND ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK COPOLYMER BLENDS

Lawrence P. DeMejo, Scotia, and Richard C. Bopp, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1978, Ser. No. 890,592
Int. Cl.[2] C08K 3/26
U.S. Cl. 260—40 R **10 Claims**

1. An improved high impact low warp polymer blend comprising a polyalkylene terephthalate resin, an organopolysiloxane-polycarbonate block copolymer, and a calcium carbonate filler.

4,157,998

METHOD OF PRODUCING A CEMENT MORTAR WITH GOOD STABILITY IN A FRESH CONDITION AND A METHOD USING THIS MORTAR AS A BINDING AGENT OF PRODUCING A LIGHTWEIGHT AGGREGATE CONCRETE WITH A HIGH AGGREGATE CONTENT

Leif Berntsson; Bengt Hedberg, both of Goteborg; Sören Karlsson, and Olof Magnusson, both of Karlskoga, all of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Dec. 23, 1977, Ser. No. 864,035
Claims priority, application Sweden, Dec. 23, 1976, 7614518
Int. Cl.[2] C04B 7/35
U.S. Cl. 260—42.13 **28 Claims**

1. A method for producing a cement mortar containing cement, solid particles and water and having finely distributed gas in the mortar in an amount sufficient to provide said mortar with a density of 1200–2000 kg/m^3 which comprises introducing into the mortar prior to setting thereof 0.2–5.0 percent by weight based upon the quantity of cement of a particle-shaped hydrophilic-hydrophobic balanced product chemically inert in relation to the rest of the mortar and consisting of substantially spherical hydrophobic particles of 0.1–1.0 μm strongly adsorbed on the surface of which is a hydrophilic nonionic tenside in amount of 0.1–5.0 percent by weight based on the total weight of said product.

27. A cement mortar comprising cement, solid particles, water, finely distributed gas in an amount to provide said mortar with a density of 1200–2000 kg/m^3, and 0.2–5.0 percent by weight based upon the quantity of said cement of a particle-shaped hydrophilic-hydrophobic balanced product chemically inert to the rest of the mortar and consisting of substantially spherical hydrophobic particles of 0.1–1.0 μm strongly adsorbed on the surface of which is a hydrophilic nonionic tenside in amount of 0.1–5.0 percent by weight based on the total weight of said product.

4,157,999

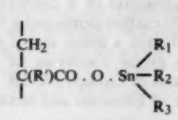
ANTI-FOULING PAINT COMPOSITION

Sumio Matsuda, Ibaraki, and Hajime Kudara, Shiga, both of Japan, assignors to Chugoku Marine Paints Ltd., Hiroshima, Japan

Filed Nov. 28, 1977, Ser. No. 855,230
Claims priority, application Japan, Aug. 10, 1977, 52-96248
Int. Cl.[2] C09D 3/74, 5/14, 5/16
U.S. Cl. 260—42.21 **6 Claims**

1. An anti-fouling paint composition which comprises 20% to 60% by weight of at least one pigment and 20% to 60% by weight of a copolymer having an average molecular weight of approximately 4,000 to approximately 30,000 and comprising:

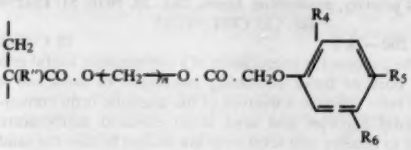
(i) 40% to 80% by weight, based on the weight of the copolymer, of units expressed by the formula:



(I)

wherein R′ is hydrogen or a methyl group and R_1, R_2 and R_3 are the same or different and selected from alkyl groups having 1 to 8 carbon atoms and a phenyl group,

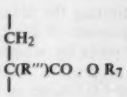
(ii) 5% to 50% by weight, based on the weight of the copolymer, of units expressed by the formula:



(II)

wherein R″ is hydrogen or a methyl group, n is an integer of 2 to 4, R_4 is chlorine or an alkyl group having 1 to 4 carbon atoms, R_5 is chlorine or bromine and R_6 is hydrogen, chlorine or bromine, and

(iii) 5% to 30% by weight, based on the weight of the copolymer, of units expressed by the formula:



(III)

wherein R‴ is hydrogen or a methyl group and R_7 is an alkyl group having 1 to 8 carbon atoms.

4,158,000

ANTIDEGRADANTS FOR RUBBER

Hideo Nagasaki, Osaka; Takashi Kojima, Toyonaka, and Yoshinori Shiro, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed May 16, 1978, Ser. No. 906,565
Claims priority, application Japan, May 25, 1977, 52/61557
Int. Cl.[2] C08K 5/34
U.S. Cl. 260—45.8 NW **3 Claims**

1. A method for preventing heat ageing and flex cracking of rubber at the same time, which comprises incorporating the antidegradant for rubber comprising a mixture consisting essentially of 2,2,4-trimethyl-1,2-dihydroquinoline monomer, dimer thereof and more highly polymerized products than the said dimer, the contents of the said quinoline monomer and the said quinoline dimer being less than 5% by weight and 25% by weight or more, respectively into said rubber.

4,158,001
TRIORGANOTIN COMPOUNDS OF HYDROXYDIAZENIUM OXIDES AND FUNGICIDAL USES THEREOF

Wolfgang Reuther, Ziegelhausen; Paul Raff, Ludwigshafen; Ernst-Heinrich Pommer, Limburgerhof, and Hans-Peter Heidenreich, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

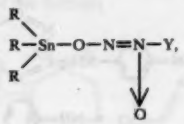
Filed Jun. 10, 1977, Ser. No. 805,404

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1976, 2633452

Int. Cl.[2] A01N *9/20;* **B27K** *3/34;* **C07C** *111/00, 113/04*

U.S. Cl. 260—141 **8 Claims**

1. A triorganotin compound of a hydroxydiazenium oxide of the formula



where the radicals R are identical or different and each denotes alkyl of from 1 to 12 carbon atoms, or phenyl, and Y denotes alkyl or cycloalkyl.

4,158,002
PROCESS FOR PREPARING DINITROAZO- (OR AZOXY-)BENZENE

Kazutoshi Funahashi, and Yoichi Saito, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

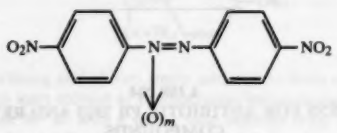
Continuation-in-part of Ser. No. 735,945, Oct. 27, 1976, abandoned. This application Apr. 25, 1978, Ser. No. 899,866

Claims priority, application Japan, Oct. 31, 1975, 50-130346; Dec. 24, 1975, 50-153352

Int. Cl.[2] C07C *105/00, 107/06, 85/11*

U.S. Cl. 260—143 **5 Claims**

1. A process for preparing a compound of the formula



wherein m represents zero or 1, which comprises reacting azobenzene with nitric acid in the presence of sulfuric acid in two steps, wherein

(1) the first-step reaction is carried out under the following conditions

$0 < x \leqq 80$,

$0 < y \leqq 11$, and

$-0.3x + 12 \leqq y \leqq -0.22x + 22$

wherein x is the reaction temperature in °C., and y is the weight ratio of sulfuric acid to water fed into the reaction system, and

(2) the second-step reaction is carried out under the following conditions

$0 \leqq x$, and

$(1.7/100)x + 1.7 \leqq y \leqq -(3.9/88)x + 3.9$.

4,158,003
METALLIZED BIS-FORMAZANS

Otto Bitterlin, and Paul Dussy, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

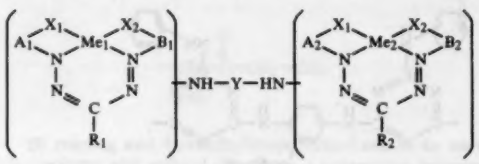
Continuation of Ser. No. 634,732, Nov. 25, 1975, abandoned, which is a continuation of Ser. No. 512,319, Oct. 4, 1974, abandoned, which is a continuation of Ser. No. 274,206, Jul. 24, 1972, abandoned, which is a continuation of Ser. No. 883,612, Dec. 9, 1969, abandoned. This application Nov. 11, 1976, Ser. No. 741,017

Claims priority, application Switzerland, Dec. 10, 1968, 18394/68

Int. Cl.[2] C09B *45/48*

U.S. Cl. 260—146 T **10 Claims**

1. A heavy-metal-containing bisformazan dyestuff of the formula

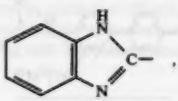


wherein

A_1 and A_2 represent (1) o-phenylene, (2) o-phenylene substituted by Z, halogen, lower alkyl, lower alkoxy, lower alkylsulphonyl, sulphamoyl, N-mono- or N,N-di-lower alkyl sulphamoyl, (3) o-naphthylene, or (4) o-naphthylene substituted by Z,

B_1 and B_2 represent (1) o-phenylene, (2) o-phenylene substituted by Z, halogen, lower alkylsulphonyl or sulphamoyl, (3) o-naphthylene, or (4) o-naphthylene substituted by Z,

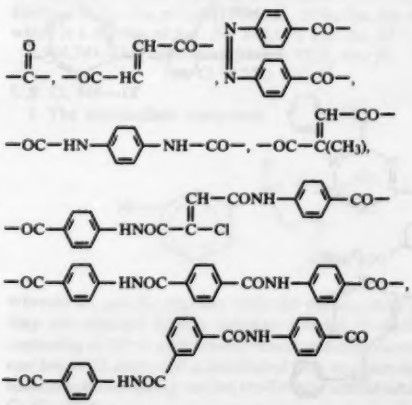
R_1 and R_2 represent (1) carboxy, (2) phenyl, (3) phenyl substituted by OH, halogen, or Z, (4) naphthyl, or (5)



Me_1 and Me_2 each represent nickel or copper,

one of X_1 and X_2 represents —O— and the other represents —COO— said groups being connected to A_1, B_1, A_2 or B_2 in a position ortho to that to which the nitrogen is linked,

Y represents a radical of the formula



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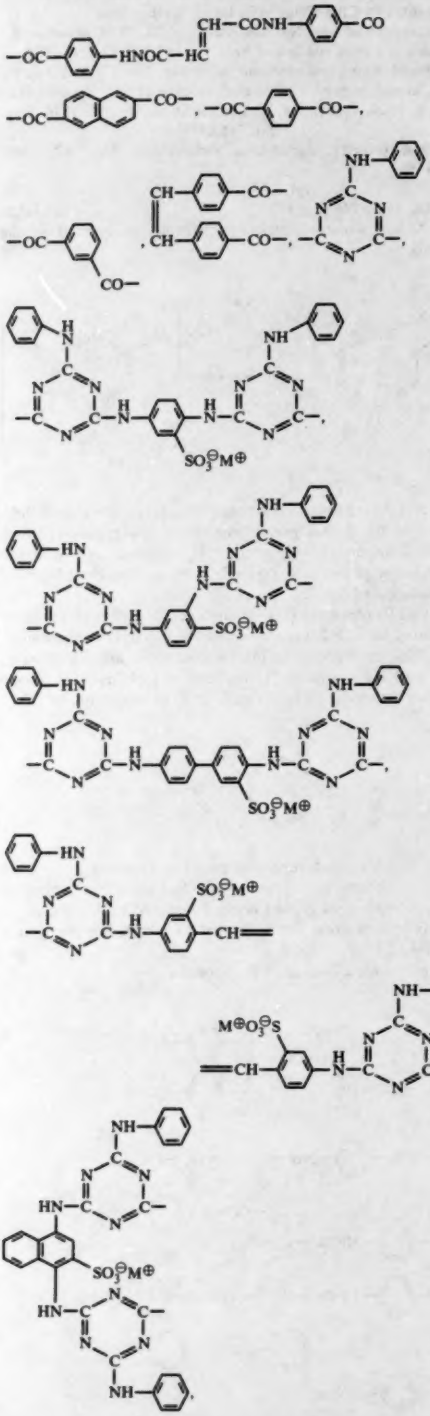

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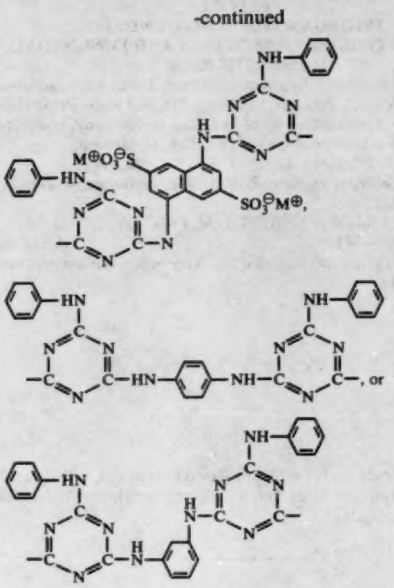


Z represents a salt-forming water solubilizing group dissociating acid in water selected from $-SO_3^{\ominus}M^{\oplus}$ and $-COO^{\ominus}M^{\oplus}$,

$M^{\oplus}$ represents hydrogen, sodium, potassium, lithium or ammonium,

the grouping —NH—Y—NH— being bond directed to a ring carbon atom of A_1, A_2, B_1, B_2, R_1 or R_2,

with the proviso that the total number of salt-forming water solubilizing groups dissociating acid in water present in the dyestuff is from 2 to 6.

4,158,004

PROCESS FOR ANTIBIOTIC FR 1923 AND RELATED COMPOUNDS

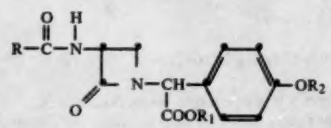
Gary A. Koppel, and Robin D. G. Cooper, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1976, Ser. No. 739,161

Int. Cl.[2] **C07D** *201/08, 205/08*

U.S. Cl. 260—239 A **9 Claims**

1. The process for preparing a 3-acylaminoazetidin-2-one of the formula

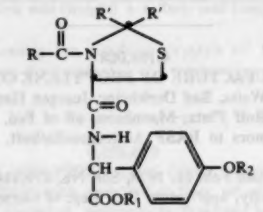


wherein

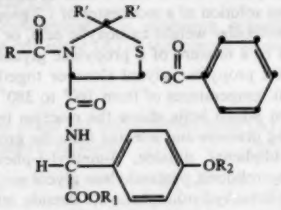
R is C_1–C_3 alkyl, phenyl, or benzyl;

R_1 is methyl, benzyl, 4-methoxybenzyl, diphenylmethyl, or 2,2,2-trichloroethyl; and

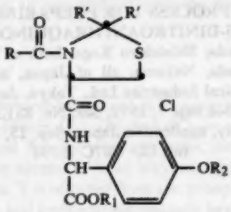
R_2 is benzyl, 4-methoxybenzyl, or diphenylmethyl; which comprises the steps (a) reacting in an inert solvent a 3-acylthiazolidine-4-carboxamide of the formula



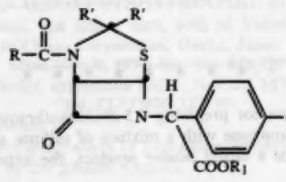
wherein R, R_1, and R_2 have the above defined meanings and both of R′ are methyl or ethyl; with benzoyl peroxide to form the 5α-benzoate of the formula



(b) reacting said benzoate in an inert solvent at a temperature between about −20° and about 5° C. with hydrogen chloride to form the 5α-chloro thiazolidine amide of the formula

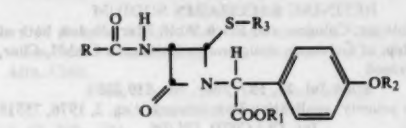


(c) cyclizing said chloro amide under anhydrous conditions in an inert solvent at a temperature between about 0° and about 30° C. with a strong base selected from the group consisting of sodium hydride and 1,5-diazabicyclo[5.4.0]-undec-5-ene to form the thiazolidine azetidin-2-one of the formula

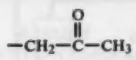


(d) oxidizing the thiazolidine azetidin-2-one with a per organic acid to the corresponding sulfoxide;

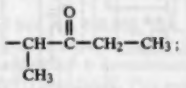
(e) heating said sulfoxide in a polar aprotic solvent in the presence of water and an acid selected from the group consisting of a lower alkylsulfonic acid, phenylsulfonic acid, p-toluenesulfonic acid or p-chlorobenzenesulfonic acid at a temperature between about 80° and about 120° C. to form a 3-acylamino-4-(oxaalkylthio)azetidin-2-one of the formula



wherein R, R_1, and R_2 have the above defined meanings and R_3 is a 2-oxapropyl group of the formula



or a 2-oxapentyl group of the formula



(f) reacting said 4-(oxaalkylthio)azetidin-2-one in an inert solvent with sulfuryl chloride at a temperature between about −25° C. and about 10° C.;

(g) reducing the reaction product mixture obtained in step (f) under anhydrous conditions in an inert aprotic solvent at a temperature between about 65° and about 95° C. with about a 2 molar excess of a tin hydride of the formula

wherein R_4, R_5, and R_6 independently are C_1–C_4 alkyl, phenyl, or phenyl substituted by methyl or chloro, and azobisisobutyronitrile in an amount equimolar to the tin hydride; to form

(h) and recovering said 3-acylaminoazetidin-2-one.

4,158,005

INTERMEDIATES USEFUL IN THE SYNTHESIS OF OPTICALLY ACTIVE M-ACYLOXY-α-[(METHYLAMINO)METHYL]BENZYL ALCOHOLS

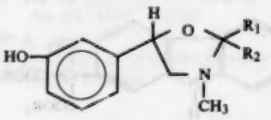
Nicolae S. Bodor, and Sun-Shine Yuan, Lawrence, both of Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Division of Ser. No. 671,067, Mar. 29, 1976, Pat. No. 4,028,368, which is a division of Ser. No. 548,606, Feb. 10, 1975, Pat. No. 3,966,749. This application May 9, 1977, Ser. No. 794,923

Int. Cl.[2] C07D *498/10*

U.S. Cl. 546—15 **3 Claims**

1. The intermediate compound:



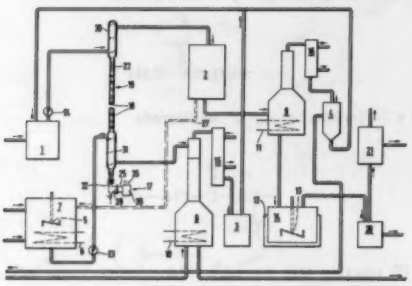
wherein R_1 and R_2 together with the carbon atom to which they are attached form a member selected from the group consisting of a five- to seven-membered heterocycle containing one hetero-O-atom, and a substituted five- to seven-membered heterocycle containing one hetero-O-atom whose substituent is C_1–C_2 alkyl.

4,158,006

REFINING SACCHARIN SODIUM

Rolf Deininger, Cologne, and Erich Wolf, Marialinden, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Chur, Switzerland

Filed Jul. 27, 1977, Ser. No. 819,255
Claims priority, application Luxembourg, Aug. 2, 1976, 75518
Int. Cl.[2] C07D *275/06*
U.S. Cl. 260—301 5 Claims



1. A process for refining saccharin sodium soluted in an aqueous solution, said solution having been obtained by the process of Fahlberg-Rensen, and being contaminated with about 5000 ppm of o-toluenesulphonamide and containing 30 to 60 percent by crystal weight of saccharin sodium, which comprises;

adjusting the contaminated solution to obtain a pH of from 4.5 to 6.0 and a temperature of from 15° to 22° C.;

extracting the o-toluenesulphonamide with methylene chloride at a temperature of from 15° to 22° C. passed countercurrently to a flow of said contaminated solution and emulsified with the contaminated solution as they pass countercurrently by intermittently passing them through flow baffle plates, said flow of methylene chloride being substantially vertical in orientation whereby the methylene chloride is directed downwards;

evaporating the methylene chloride residues from the extracted aqueous solution; and

crystallizing the saccharin sodium from the evaporated solution;

wherein the countercurrent extraction is continued until the saccharin sodium crystallizable from the aqueous solution has a content of less than 1 ppm o-toluenesulphonamide.

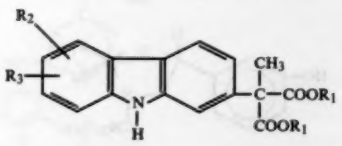
4,158,007

CARBAZOLE METHYL MALONATES

Harvey Gurien, West Orange, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., N.J.

Filed Aug. 21, 1978, Ser. No. 935,197
Int. Cl.[2] C07D *209/88*
U.S. Cl. 260—315 2 Claims

1. A compound of the formula



V

wherein R_1 is lower alkyl, R_2 is hydrogen, halogen, trifluoromethyl, hydroxy, lower alkyl, hydroxy-lower alkyl, lower alkylthio, amino, mono-lower alkylamino, or di-lower alkylamino; and R_3 is halogen, trifluoromethyl, lower alkyl, hydroxy-lower alkyl, lower alkoxy, lower alkylthio, hydroxy, amino, mono-lower alkylamino or di-lower alkylamino, or R_2, taken together with an adjacent R_3, is also lower alkylenedioxy.

4,158,008

MANUFACTURE OF PROPYLENE OXIDE

Hans-Martin Weitz, Bad Durkheim; Juergen Hartig, Ludwigshafen, and Rolf Platz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,514
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707638
Int. Cl.[2] C07D *301/02*
U.S. Cl. 260—348.16 6 Claims

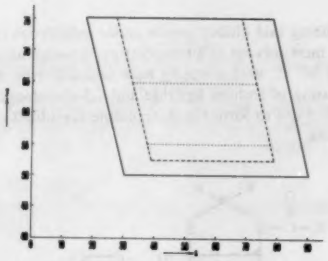
1. A process for the manufacture of propylene oxide by eliminating carboxylic acid from an ester of 1,2-propylene glycol in the presence of a base which comprises: heating a homogeneous solution of a monoester of 1,2-propylene glycol and a low-molecular weight carboxylic acid, or a homogeneous solution of a mixture of a propylene glycol diester with water or with propylene glycol alone or together with said monoester at temperatures of from 160° to 380° C., in an organic solvent which boils above the reaction temperature at the prevailing pressure and selected from the group consisting of dimethyldiphenyl dioxide, 3-methyl-1-phenylindan, N-cyclohexylpyrrolidone, pentaethylene glycol methyl isopropyl diether, alkyltetrahydrothiophene-1,1-dioxide tetrahydrothiophene-1,1-dioxide and a mixture of isomeric triaryldimethanes, in the presence of a dissolved base or a basic-reacting salt of said base, and isolating propylene oxide from the vapor evolved.

4,158,009

PROCESS FOR PREPARING 1,5-DINITROANTHRAQUINONE

Yoshiyuki Takeda; Shinichiro Koga, both of Kitakyusyu, and Yutaka Fukuda, Nakama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,223
Claims priority, application Japan, Sep. 13, 1976, 51-109669
Int. Cl.[2] C07C *49/68*
U.S. Cl. 260—369 9 Claims



1. In a process for preparing 1,5-dinitroanthraquinone by nitrating anthraquinone with a mixture of sulfuric and nitric acids to produce a mixed isomer product, the improvement comprising:

after the nitration reaction, heating a suspension of the mixed isomer product at a temperature from 50° to 90° C. in a liquid medium consisting essentially of sulfuric acid and nitric acid as a mixed acid in proportions defined by the area encompassed by the solid line in FIG. 1 of the drawings wherein:

$$X \text{ represents } \frac{\text{nitric acid (mol.)}}{\text{dinitroanthraquinone (mol.)}}$$

-continued

$$Y \text{ represents } \frac{\text{nitric acid (weight)}}{\text{nitric acid (weight)} + \text{sulfuric acid (weight)}} \times 100$$

and then separating the resulting crystals of 1,5-dinitroanthraquinone from the suspension at a temperature of 30° to 90° C.

4,158,010

PROCESS FOR PREPARING ORGANOSILANES

Werner Graf; Peter John, and Volker Frey, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,462

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728196

Int. Cl.[2] C07F *7/12*

U.S. Cl. 260—448.2 P **6 Claims**

1. An improved process for preparing organosilanes by reacting at least one silane (A) of the general formula:

$$R_aSiCl_{4-a}$$

with at least one silane (B) which differs from (A) and corresponds to the general formula:

$$R_bSiCl_{4-b}$$

in the presence of at least one organoaluminum compound having the general formula:

$$R_c^1AlY_{3-c}$$

the improvement which comprises conducting the reaction in the presence of at least one silane (C) having the general formula:

$$R_bH_cSiCl_{4-b-c}$$

and from 0.1 to 5 percent by weight of hydrogen halide based on the weight of silanes (A), (B) and (C), in which R is a hydrocarbon radical free of aliphatic unsaturation and has from 1 to 10 carbon atoms; R^1 is an alkyl radical having from 1 to 4 carbon atoms; Y is selected from the group consisting of halogen, hydrogen and hydrocarbon radicals having from 1 to 10 carbon atoms which are free of aliphatic unsaturation and which are bonded to the aluminum atom via oxygen; a is 2, 3 or 4; b is 0, 1, 2 or 3; c is 1, 2 or 3 and the sum of b+c must not exceed 4.

4,158,011

p'-CYANOPHENYL ESTER OF p-(β-ALKOXY)ETHOXYBENZOIC ACID

Takashi Inukai, and Hideo Sato, both of Yokohama, Japan, assignors to Chisso Corporation, Osaka, Japan

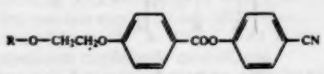
Filed Nov. 9, 1977, Ser. No. 849,737

Claims priority, application Japan, Nov. 26, 1976, 51/141917

Int. Cl.[2] C07C *121/75*

U.S. Cl. 260—465 D **2 Claims**

1. p'-Cyanophenyl esters of p-(β-alkoxy)ethoxybenzoic acid represented by the general formula



(I)

wherein R represents a straight chain alkyl group having 1–6 carbon atoms.

4,158,012

STEROID SYNTHESIS PROCESS USING MIXED ANHYDRIDE

Gary F. Cooper, Menlo Park, and Albert R. Van Horn, Los Altos, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 19, 1978, Ser. No. 916,443

Int. Cl.[2] C07C *61/38*

U.S. Cl. 260—546 **2 Claims**

1. The chemical compound 7aβ-methyl-2,3,3aα,4,5,6,7,7a-octahydro-1H-inden-1,5-dione-4α-(3-propionic acid) pivalic acid mixed anhydride.

4,158,013

N-CYANO-N'-ALKYNYL-N''-2-MERCAPTOETHYL-GUANIDINES

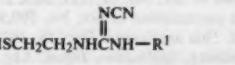
Ronnie R. Crenshaw, Dewitt, and George M. Luke, LaFayette, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 848,959, Nov. 7, 1977, Pat. No. 4,112,234, which is a continuation-in-part of Ser. No. 826,796, Aug. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 803,009, Jun. 3, 1977, abandoned. This application May 18, 1978, Ser. No. 906,901

Int. Cl.[2] C07C *125/08, 129/08*

U.S. Cl. 260—551 C **10 Claims**

1. A compound of the formula



wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, or an acid addition salt thereof.

4,158,014

4-(HYDRAZONOMETHYL)BENZOIC ACID HYDRAZIDE

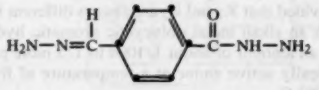
Harry R. Musser, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,226

Int. Cl.[2] C07C *109/10*

U.S. Cl. 260—558 H **1 Claim**

1. 4-(Hydrazonomethyl)benzoic acid hydrazide having the structure



4,158,015

PROCESS FOR THE STEREOSELECTIVE SYNTHESIS OF THE E ISOMER OF ARYL ALKYL OXIMES

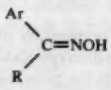
Jill H. Paul, Edgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,142

Int. Cl.[2] C07C *129/00*

U.S. Cl. 260—566 A **7 Claims**

1. A process for producing >98% pure E isomer of an aryl alkyl ketoxime having the formula:



wherein Ar is phenyl; phenyl substituted in the 2- to 6-position

with 1-5 halogen (Cl, Br, F, I), C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, methylenedioxy, ethylenedioxy, isopropylenedioxy, trifluoromethyl, C_1–C_4 haloalkyl, C_1–C_4 alkylthioalkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, cyano, C_2–C_4 cyanoalkyl, C_2–C_4 carboalkoxy, C_1–C_4 alkylsulfonyl, C_2–C_8 alkoxyalkyl, C_2–C_4 haloalkenyl, or C_1–C_4 acyl; indanyl; naphthyl; benzofuryl; benzodihydrofuryl; benzothienyl; thienyl; R is C_2–C_6 alkyl, C_3–C_6 cycloalkyl, or C_2–C_6 alkenyl, any of which can be substituted by halogen, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl, cyano, nitro, C_2–C_4 carboalkoxy, or C_1–C_4 acyl; that comprises contacting a solution of mixed E and Z isomers of said aryl alkyl ketoxime in an anhydrous organic solvent with at least a stoichiometric amount of anhydrous protic or Lewis acid at between about −20° C. and about 150° C., thereby precipitating the E isomer of an immonium complex of said aryl alkyl ketoxime, separating said precipitate, neutralizing said precipitate with an excess of dilute aqueous Na_2CO_3 or $NaHCO_3$, and separating said E isomer.

4,158,016

METHOD FOR RACEMIZATION OF OPTICALLY ACTIVE AMINES

Tsuneyuki Nagase, Takatsuki; Gohu Suzukamo, Ibaraki, and Yoshio Suzuki, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

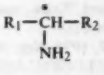
Continuation of Ser. No. 697,111, Jun. 17, 1976, abandoned, which is a continuation of Ser. No. 500,927, Aug. 27, 1974, abandoned. This application Dec. 16, 1977, Ser. No. 861,515

Claims priority, application Japan, Aug. 31, 1973, 48-98575; Sep. 1, 1973, 48-98558

Int. Cl.² C07C *85/26*

U.S. Cl. 260—570.5 R **8 Claims**

1. A method for the racemization of optically active amines which comprises contacting an optically active amine of the formula:



wherein C* is an asymmetric carbon atom, R_1 is alkyl of up to 4 carbon atoms, aralkyl of up to 12 carbon atoms, phenyl, naphthyl or phenyl substituted with one methyl group and R_2 is phenyl, naphthyl or phenyl substituted with one methyl group, provided that R_1 and R_2 are always different from each other, with an alkali metal polycyclic aromatic hydrocarbon catalyst in an amount of about 1/1000 to 1/5 mole per 1 mole of the optically active amine at a temperature of from about −10° to 100° C.

4,158,017

PREPARATION OF 1,3-DIAMINO-2,2-DIMETHYL-PROPANE

Franz Merger, Frankenthal, and Adolph Segnitz, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,194

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722957

Int. Cl.² C07C *85/06, 85/08*

U.S. Cl. 260—585 B **12 Claims**

1. A process for the preparation of 1,3-diamino-2,2-dimethylpropane, wherein hydroxypivalaldehyde is reacted with ammonia and hydrogen in the presence of a nickel catalyst, at from 40° to 150° C. in a first step, and thereafter at from 220° to 300° C. in a second step.

4,158,018

3-OXA CARBINOL PROSTAGLANDIN ANALOGS

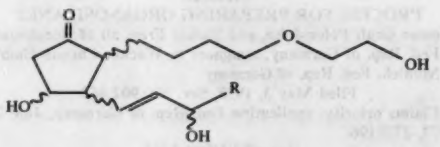
Harold C. Kluender, Madison, Wis., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 12, 1978, Ser. No. 941,746

Int. Cl.² C07C *177/00*

U.S. Cl. 260—586 R **12 Claims**

1. 3-oxa carbinol analogs of prostaglandin E_1 having the structural formula:



wherein R is n-alkyl of 4 to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms or 1,1-dimethylalkyl of 6 to 8 carbon atoms.

4,158,019

METHYLGLYOXAL DIMETHYL ACETAL PRODUCTION

Karl Meyer, Liestal, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 707,157, Jul. 21, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,534

Int. Cl.² C07C *45/00*

U.S. Cl. 260—594 **4 Claims**

1. A process for the manufacture of methylglyoxal dimethyl acetal comprising reacting at a temperature of from about 0° C. to 40° C. acetone with a nitrosating agent composed of an alkali metal nitrite and an acid, isolating the resulting isonitrosoacetone and acetalizing, with methyl alcohol, at a temperature of from −40° C. to about +40° C., said isolated isonitrosoacetone in the presence of a nitrosating agent composed of alkali metal nitrite and an acid.

4,158,020

HYDROFORMYLATION OF OLEFINS

Adin L. Stautzenberger; James L. Paul, and Jerry D. Unruh, all of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

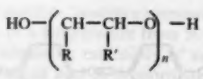
Continuation of Ser. No. 526,298, Nov. 22, 1974. This application Aug. 26, 1977, Ser. No. 828,123

Int. Cl.² C07C *45/08*

U.S. Cl. 260—604 HF **6 Claims**

1. In a process for hydroformylating an olefin with hydrogen and carbon monoxide in a reaction zone to form aldehydes, alcohols, and mixtures thereof, in which process a catalytic complex comprising rhodium, carbon monoxide, and a ligand selected from the group consisting of trivalent organo phosphorus, arsenic, and antimony compounds is formed in situ, the improvement which comprises:

introducing the rhodium into said reaction zone in the form of a water-soluble inorganic salt dissolved in a solvent comprising at least about 40% of a polyalkylene glycol selected from compounds having the following structure and mixtures thereof:



wherein n is 1-3 and R and R′ are selected from —H and —CH_3, the remainder of said solvent comprising water and an alcohol selected from the group consisting of ethanol and the propanols, and said inorganic salt being selected from the

group consisting of rhodium nitrate, rhodium sulfate, and rhodium phosphate.

4,158,021

PROCESS FOR THE PREPARATION OF A COPOLYMERIZABLE COMPOSITION

Lodewijk Roskott, Gorssel, and Arnold Schroeder, Deventer, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 588,993, Jun. 29, 1975, Pat. No. 4,097,467. This application Nov. 25, 1977, Ser. No. 855,092

Claims priority, application Netherlands, Jun. 21, 1974, 7408353

Int. Cl.[2] C07C *179/06;* C08L *67/06*

U.S. Cl. 568—567 8 Claims

1. A process for preparing an alkylaldehyde peroxide containing not more than 20 carbon atoms and at least 1.5 active oxygen atoms per carbonyl group of alkylaldehyde, said alkylaldehyde peroxide being selected from the group consisting of unsubstituted alkylaldehyde peroxide, alkyl-substituted alkylaldehyde peroxide, and aryl-substituted alkylaldehyde peroxide, comprising reacting an alkylaldehyde with not more than 20 carbon atoms with hydrogen peroxide in the form of an aqueous solution having an H_2O_2 content between about 30 and about 85% by weight, in a solvent in which both the alkylaldehyde and the formed peroxide composition are soluble, the molar ratio of carbonyl groups to H_2O_2 is the reaction mixture being between 1:1.5 and 1:4.0, in the presence of an acid catalyst with the simultaneous removal of water by distillation.

4,158,022

PREPARATION OF ETHYLBENZENE HYDROPEROXIDE

Ching-Yong Wu, O'Hara Township, Allegheny County; Harold E. Swift, Gibsonia, and John E. Bozik, Plum Borough, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 746,246, Dec. 1, 1976, abandoned. This application Nov. 29, 1977, Ser. No. 855,742

Int. Cl.[2] C07C *179/02*

U.S. Cl. 568—571 10 Claims

1. A process for oxidizing ethylbenzene to ethylbenzene hydroperoxide comprising heating ethylbenzene in contact with about 0.0005 to about 0.15 weight percent barium oxide at a temperature between about 120° C. and about 150° C. under substantially anhydrous conditions and contacting said ethylbenzene with molecular oxygen whereby said ethylbenzene is oxidized to ethylbenzene hydroperoxide at improved selectivity and yield.

4,158,023

PROCESS FOR THE MANUFACTURE OF OCTAFLUOROPROPANE

Sigmar P. von Halasz, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,731

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712732

Int. Cl.[2] C07C *17/02, 17/10*

U.S. Cl. 260—653.9 7 Claims

1. A process for the manufacture of octafluoropropane from hexafluoropropene, which comprises

converting hexafluoropropene with hydrogen fluoride in a first reaction step to 2H-heptafluoropropane, at a temperature of from 100° to 350° C. and in the presence of a chromium oxyfluoride catalyst, and

converting in a second reaction step the reaction gas obtained with elementary fluorine to octafluoropropane, at a temperature of from 100° to 350° C. in the presence of a catalyst containing an element of one of the groups IIIB to VIIB, VIII, IB or IIB of the Periodic System or a flouride compound thereof, and subsequently separating the hydrogen fluoride formed from the octafluoropropane.

4,158,024

SELECTIVE PRODUCTION OF PARA-XYLENE

Warren W. Kaeding, Westfield, and Lewis B. Young, Kendall Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 638,861, Dec. 8, 1975, Pat. No. 4,034,053. This application May 3, 1977, Ser. No. 793,471

Int. Cl.[2] C07C *3/52*

U.S. Cl. 585—467 9 Claims

1. A process for the selective production of para-xylene which comprises contacting toluene, under methylation conditions, including a temperature between about 250° C. and about 750° C., a pressure between about 1 atmosphere and about 1000 psig and a weight hourly space velocity of between about 1 and about 2000, with a methylating agent in the presence of a catalyst comprising a crystalline aluminosilicate zeolite containing less than about 1.5 weight percent alkali metal, having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, said catalyst having combined therewith magnesium in an amount of at least about 0.5 percent by weight, as a result of contact of said zeolite with a magnesium compound in the liquid phase, cooling the resulting product and separating para-xylene therefrom.

4,158,025

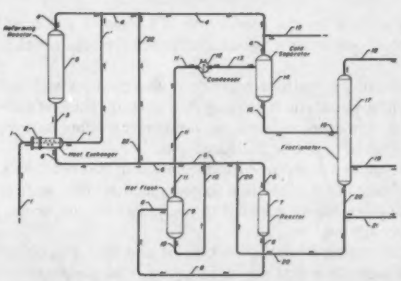
SELECTED AROMATIC HYDROCARBON PRODUCTION

George E. Addison, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 13, 1978, Ser. No. 886,314

Int. Cl.[2] C07C *3/58*

U.S. Cl. 585—321 10 Claims



1. A process for the production of a selected aromatic hydrocarbon concentrate which comprises the sequential steps of:

(a) reacting a hydrocarbonaceous charge stock and hydrogen in a catalytic reforming first reaction zone, at reforming conditions selected to convert paraffins and naphthenes to aromatic hydrocarbons;

(b) reacting at least a portion of the resulting first reaction zone effluent in a dealkylation second reaction zone, at dealkylation conditions selected to dealkylate alkylaromatic hydrocarbons;

(c) separating the resulting second reaction zone effluent, in a first separation zone, at a temperature of at least 250° F. but not substantially exceeding about 400° F. and a reduced pressure to provide (i) a first vaporous phase containing said selected aromatic hydrocarbon concentrate and, (ii) a first liquid phase;

(d) separating said first vaporous phase, in a second separation zone, at substantially the same pressure and a lower temperature in the range of about 60° F. to about 140° F.,

to provide (i) a hydrogen-rich second vaporous phase and, (ii) a second liquid phase;

(e) introducing said first liquid phase into said second reaction zone;

(f) recycling at least a portion of said hydrogen-rich second vaporous phase to said first reaction zone; and,

(g) separating said second liquid phase, in a third separation zone, (i) to recover said selected aromatic concentrate and, (ii) to provide a concentrated stream of higher boiling aromatic hydrocarbons.

4,158,026

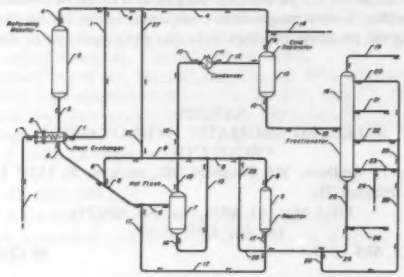
COMBINATION PROCESS FOR SELECTED AROMATIC HYDROCARBON PRODUCTION

George E. Addison, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 13, 1978, Ser. No. 886,322

Int. Cl.[2] C07C *3/58*

U.S. Cl. 585—321 **10 Claims**



1. A process for the production of a selected aromatic hydrocarbon concentrate which comprises the sequential steps of:

(a) reacting a hydrocarbonaceous charge stock and hydrogen in a catalytic reforming first reaction zone, at reforming conditions selected to convert paraffins and naphthenes to aromatic hydrocarbons;

(b) reacting a first portion of the resulting first reaction zone effluent in a dealkylation second reaction zone, at dealkylation conditions selected to dealkylate alkylaromatic hydrocarbons;

(c) separating a second portion of said first reaction zone effluent, in a first separation zone, at a temperature not substantially exceeding about 400° F. and a reduced pressure to provide (i) a first vaporous phase containing said selected aromatic concentrate and, (ii) a first liquid phase containing higher boiling, alkylaromatic hydrocarbons;

(d) introducing said first liquid phase into said dealkylation second reaction zone;

(e) introducing the resulting second reaction zone effluent into said first separation zone;

(f) separating said first vaporous phase, in a second separation zone, at substantially the same pressure and a lower temperature in the range of about 60° F. to about 140° F., to provide (i) a hydrogen-rich second vaporous phase and, (ii) a second liquid phase containing substantially all of said aromatic concentrate;

(g) recycling at least a portion of said hydrogen-rich second vaporous phase to said first reaction zone; and,

(h) separating said second liquid phase, in a third separation zone, (i) to recover said selected aromatic concentrate and, (ii) to provide a concentrated stream of higher boiling aromatic hydrocarbons.

4,158,027

STABILIZED POLYMERIZABLE VINYL URETHANE RESIN COMPOSITIONS

Alfred J. Restaino, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 796,685, May 13, 1977, Pat. No. 4,112,019, which is a division of Ser. No. 595,412, Jul. 14, 1975, Pat. No. 4,049,731. This application Jun. 26, 1978, Ser. No. 918,712

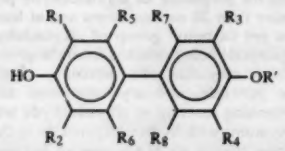
Int. Cl.[2] C08K *5/04*; C08L *67/06*

U.S. Cl. 260—859 R **3 Claims**

1. A composition comprising

(a) a vinyl or vinylidene monomer capable of free radical polymerization, and

(b) a polymerization inhibitor having the following general formula



wherein

R′ is hydrogen or an alkyl group containing from 1 to 4 carbon atoms,

R_1, R_2, R_3 and R_4 are alkyl groups containing from 1 to 5 carbon atoms, and

R_5, R_6, R_7 and R_8 are hydrogen or alkyl groups containing from 1 to 5 carbon atoms provided that only two of these may be a secondary or tertiary alkyl group, and

(c) a vinyl urethane resin comprising the reaction product of a polyhydric alcohol, a polyisocyanate and a hydroxyl terminated ester of acrylic or methacrylic acid.

4,158,028

POLYPHENYLENE ETHER-STYRENE GRAFT COPOLYMER COMPOSITION AND PREPARATION THEREOF

Shinichi Izawa, Tokyo; Jurou Ohzeki, Yokohama; Tsuyoshi Yahata, Kawasaki, and Atsuo Nakanishi, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

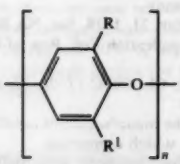
Division of Ser. No. 766,514, Feb. 7, 1977, Pat. No. 4,132,684. This application Aug. 18, 1978, Ser. No. 935,493

Claims priority, application Japan, Feb. 10, 1976, 51-12846; Dec. 27, 1976, 51-156567

Int. Cl.[2] C08L *51/00, 53/00*

U.S. Cl. 260—876 B **33 Claims**

1. A method for the manufacture of a graft copolymer composition which comprises polymerizing under continued agitation a styrene in the presence of 20 to 85 percent by weight based on the final composition of a polyphenylene ether represented by the general formula:



wherein R and R^1 each denote a hydrogen atom or an alkyl group having one to four carbon atoms and n the degree of polymerization, 3 to 40 percent by weight of an ethylene copolymer comprising ethylene and 1.0 to 40 mol percent of at least one unsaturated compound represented by the general formula of $CH_2{=}CHOCOR_1$ or $CH_2{=}CR_2COOR_3$ wherein, R_1 denotes an alkyl group having one to four carbon atoms and

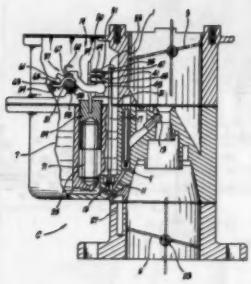
R_2 and R_3 each denote a hydrogen atom or an alkyl group having one to four carbon atoms and a radical polymerization initiator, at a temperature in the range of from 120° to 290° C.

4,158,029

MEANS FOR POSITIONING A CARBURETOR FUEL METERING ROD

Larry J. Tipton, Florissant, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,527
Int. Cl.² F02M *7/22*
U.S. Cl. 261—51 **8 Claims**



1. In a carburetor for an internal combustion engine, said carburetor having an air passage through which air is drawn into the engine, a throttle valve movable in said air passage for controlling flow of air therethrough, a source of fuel, a fuel passage through which fuel is drawn from said source to said air passage for mixing with air to produce an air-fuel mixture combusted in said engine, said fuel passage having an orifice at one end communicating with said fuel source, a metering rod having a diameter variable along its length, means responsive to the movement of said throttle valve for positioning said metering rod in said orifice thereby to control the quantity of fuel drawn through said fuel passage, said positioning means further being responsive to a change in the engine vacuum level when a change in the load on said engine occurs to vary the position of said metering rod in said orifice and thereby the quantity of fuel drawn through said fuel passage, the improvement comprising:

throttle valve controlled means for positively limiting the opening movement of said metering rod produced in response to a change in the engine vaccum level at intermediate throttle valve positions thereby to limit the variation in quantity of fuel drawn through said fuel passage when a change in engine vacuum level occurs; and

means responsive to the engine vacuum level being less than a predetermined level for overriding said limiting means and producing a relatively greater movement in the position of said metering rod in said orifice than that allowed by said limiting means whereby a relatively greater quantity of fuel is drawn through said fuel passage during cranking of the engine.

4,158,030

METHOD FOR MAKING LENSES FROM A MODIFIED POLYMERIZATION PRODUCT OF METHYL METHACRYLATE

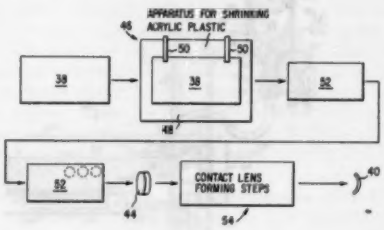
Nick Stoyan, 4505 Van Nuys Blvd., Sherman Oaks, Calif. 91413

Filed Jun. 24, 1977, Ser. No. 809,557
Int. Cl.² B29D *11/00*
U.S. Cl. 264—1 **1 Claim**

1. A method of manufacturing lenses for the eyes comprising:

heat treating a modified polymerization product of methyl methacrylate, said product being in as-cast form ready for use to make satisfactory lenses prior to heat treating,

heat treating by placing said product in an oven and heating it to approximately 137.7° C. for about 30 minutes, while heating, shrinking said product linearly about 2% and increasing the thickness in another direction about 4%, reducing the product temperature to room temperature,



cutting lens blanks from the treated product in which the optical clarity and wetability has been improved, and forming finished lenses from the blanks by conventional grinding means.

4,158,031

ELECTRICALLY CONDUCTIVE FOAM MOULDINGS

Franz G. Reuter, Lemförde, and Tankred Menzel, Bad Essen, both of Fed. Rep. of Germany, assignors to Reuter Technologie GmbH, AM Rauhen Berge, Lemförde, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,074
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617698
Int. Cl.² B29D *27/00*; B65D *11/00*
U.S. Cl. 521—57 **2 Claims**

1. A process for making molded electrically conductive foam products which comprises heating polystyrene beads containing a blowing agent to expand the beads to form closed cell polystyrene foam particles, coating said particles by forming a mixture containing a film forming polyacrylate ester and a non-film forming polystyrene dispersion of carbon black whereby a non-continuous coating is produced, placing the partially coated particles in a mold and heating the mold's contents to about 105° C. until the prefoamed beads expand and develop a pressure of about 1 atmosphere gauge in the mold and the beads are welded together.

4,158,032

CENTRIFUGAL PROCESS FOR PRODUCTION OF POLYURETHANE FOAM

Derk J. Boon, Charlotte, N.C., assignor to Reeves Brothers, Inc., New York, N.Y.

Filed May 3, 1977, Ser. No. 793,286
Int. Cl.² B29D *27/04*
U.S. Cl. 264—51 **13 Claims**

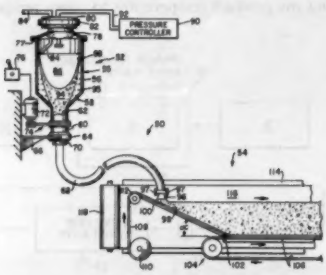
1. A process for producing polyurethane foam comprising the steps of:

(a) preparing a liquid mixture of polyurethane foam generating reactants;

(b) centrifugally processing the liquid mixture of reactants in a substantially axially symmetric centrifuge, which centrifuge comprises a rotatable container having a side wall and a first end wall, the container being rotatable about its axis, the first end wall having an opening therethrough concentric of the axis for discharging from the interior of the container the more viscous, partially-expanded, less dense prefoamed fluid mixture, and the interior of the container being clear of non-rotatable obstructions which would collide with the rotating mixture obtained from the reactants when the centrifuge is in operation, to impel the liquid mixture against the radial inner side wall of the centrifuge and form a more viscous, partially-expanded

less dense prefoamed fluid mixture from the liquid mixture of polyurethane foam-generating reactants, and

(c) then removing the more viscous, partially-expanded



prefoamed mixture from the opening in the axial region of the centrifuge and depositing the resultant mixture on a surface to complete its rise and cure and thereby form a polyurethane foam.

4,158,033

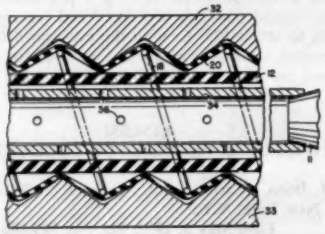
HALOGENATED BUTYL INTERLAYER FOR REINFORCED ELASTOMERIC HOSE ARTICLES

Gene E. Stefano, Littleton, and David N. Tally, Arvada, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 593,591, Jul. 7, 1975, Pat. No. 4,096,888. This application Jan. 23, 1978, Ser. No. 871,679

Int. Cl.[2] B29D *23/00, 23/04;* **B29H** *7/14*

U.S. Cl. 264—103 **9 Claims**



1. A method for making a textile layer reinforced composite hose article resistant to fluid penetration, comprising:

forming a cylindrically shaped tube of vulcanizable elastomer comprising a terpolymer of mixed mono-olefins and polyolefins blended with ultrarapid accelerators and curing agent;

applying to one side of a textile layer a gum layer of chlorinated butyl vulcanizable elastomer, said gum layer making direct adhering contact with fibers of said textile layer;

positioning the textile layer about the tube with the gum layer of the chlorinated butyl elastomer interposed between the tube and textile layer to produce a preform;

applying a cover over the textile preform composed of an elastomeric material dissimilar from and not readily bondable to said terpolymer; and

vulcanizing the thus formed article to produce a composite unitary hose.

4,158,034

STERILIZATION METHOD AND APPARATUS FOR DIALYSIS SYSTEM

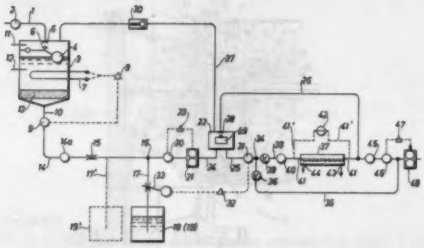
Gerhard Riede, Vellinge; Lars-Åke L. Larsson, Löddeköpinge; Roland J. E. Andersson, Bjarred, and Sven A. Jönsson, Staffanstorp, all of Sweden, assignors to Gambro AB, Lund, Sweden

Filed Oct. 13, 1977, Ser. No. 841,898

Claims priority, application Sweden, Oct. 14, 1976, 7611388

Int. Cl.[2] A61L *1/00, 3/00;* **B01D** *13/00*

U.S. Cl. 422—36 **26 Claims**



1. A method of sterilizing a dialysis system comprising a dialyzer, a receptacle for dialysis concentrate, a receptacle for water, and fluid conducting means for conducting fluids from said receptacle for water and said receptacle for dialysis concentrate to and through the dialyzer, said fluid conducting means including pump means downstream of said receptacles and upstream of said dialyzer for withdrawing fluid from said receptacles for dialysis concentrate and for water into said fluid conducting means and for pumping fluids through said fluid conducting means, said sterilization method comprising the steps of:

terminating the conducting of dialysis concentrate through said fluid conducting means;

providing a source of sterilizing agent, separate from the fluids in said receptacles for water and dialysis concentrate, in fluid communication with said fluid conducting means at a first point in said fluid conducting means, said first point being upstream of said pump means;

withdrawing sterilizing agent from said source of sterilizing agent with said pump means into said fluid conducting means at said first point;

conducting the sterilizing agent through said fluid conducting means downstream of said first point;

directing at least a portion of said sterilizing agent from a second point in said fluid conducting means to a third point in said fluid conducting means, said second point being downstream of said first point and of said pump means, and said third point being upstream of said first point;

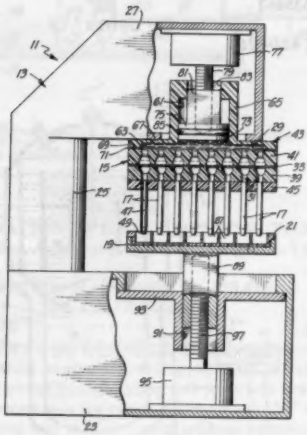
stopping the flow of sterilizing agent beyond a fourth point in said fluid conducting means, said fourth point being downstream of said first and second points and upstream of said dialyzer, so that substantially all of the sterilizing agent is conducted to said third point in said fluid conducting means; and

then starting flow of sterilizing agent in said fluid conducting means beyond said fourth point after sterilizing agent has been conducted substantially throughout the portion of said fluid conducting means upstream of said fourth point so that sterilizing agent is also conducted substantially throughout the remainder of said flow conducting means downstream of said fourth point.

4,158,035
MULTIPLE SAMPLE MICROPIPETTE

Thomas Haase, 2996 Alta Laguna, Laguna Beach, Calif. 92651, and William J. Byrd, 530 Kingsland Ave., Nutley, N.J. 07110

Filed Mar. 15, 1978, Ser. No. 886,569
Int. Cl.[2] B01L *3/02;* G01N *1/14*
U.S. Cl. 422—100 8 Claims



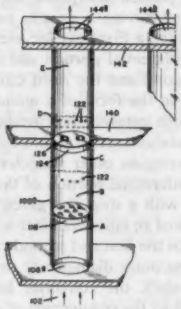
1. A pipetting device comprising:
a housing;
a plurality of tubes mounted on said housing, each of said tubes having a passage extending therethrough;
said housing having a manifold chamber and a plurality of passages leading from said tubes, respectively, to said manifold chamber;
flexible impervious membrane means extending across said passages to divide each of said passages into a first passage section and a second passage section, said first passage sections providing communication respectively between said tubes and first locations on one side of said membrane means, said second passage sections extending respectively from second locations on the other side of said membrane means to said manifold chamber, said second locations being opposite said first locations, respectively;
a substantially incompressible flowable material filling said second passage and said manifold chamber, said flowable material being a liquid; and
means for moving the flowable material to deflect the membrane means in opposite directions in said passages whereby liquid can be drawn into and expelled from said tubes.

4,158,036
FLUID BED HEAT RECOVERY APPARATUS

James Jaffe, Lake Hopatcong, N.J.; Thomas J. O'Rourke, Grand Island, and Arthur S. Chu, Amherst, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 2, 1977, Ser. No. 792,749
Int. Cl.[2] B01J *8/28;* F28D *13/00*
U.S. Cl. 422—142 3 Claims

1. A fluid bed reactor comprising:
(a) a housing having an inlet and an outlet;
(b) a plurality of parallel tubes within said housing, each tube having an inlet adjacent the housing inlet and an outlet adjacent the housing outlet;
(c) a first grid within each said tube adjacent said tube inlet;
(d) a first fluidized bed of particles within each said tube supported on said first grid;
(e) a second grid within each said tube between said first grid and said tube outlet;
(f) a second fluidized bed of particles within each said tube between said second grid and said tube outlet;
(g) heat exchange means for withdrawing heat from each

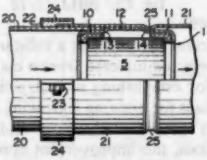


said second fluidized bed of particles; each said first fluidized bed of particles being at a temperature greater than the minimum reaction temperature of a selected chemical reaction and each said second fluidized bed of particles being at a temperature less than said minimum reaction temperature.

4,158,037
EXHAUST GAS PURIFIER FOR INTERNAL COMBUSTION ENGINE

Toshiho Aoyama, Nagoya, Japan, assignor to Chuo Hatsujo Kabushiki Kaisha, Nagoya, Japan

Filed May 15, 1978, Ser. No. 905,917
Claims priority, application Japan, May 16, 1977, 52/55491
Int. Cl.[2] B01J *35/04;* F01N *3/15;* B01J *9/02*
U.S. Cl. 422—179 6 Claims



1. A catalytic converter of cassette type which is adapted to be mounted in an exhaust gas passage of an internal combustion engine comprising an outer cylindrical metal shell having inwardly directed radial flanges at its opposite ends which define a gas inlet and gas outlet and also including a first circumferential portion located adjacent to the gas inlet and a second circumferential portion located adjacent to the gas outlet which are of an equal outer diameter and a third circumferential portion interposed between the first and second portions and having a greater outer diameter than the latter, thus defining a first bevelled area between the first and the third circumferential portion and a second bevelled area between the second and the third circumferential portion, a catalyst carrier in the form of a monolithic, porous ceramic body coated with catalyst, and resilient support means for mounting the catalyst carrier within the shell.

2. An exhaust gas purifier for internal combustion engines comprising a pair of tubular members which define a passage for exhaust gas, means for connecting the tubular members in tandem and in coaxial manner, and a catalytic converter of cassette type which is adapted to be mounted within the gas

passage, the catalytic converter including an outer cylindrical metal shell having inwardly directed radial flanges at its opposite ends which define a gas inlet and gas outlet and also including a first circumferential portion located adjacent to the gas inlet and a second circumferential portion located adjacent to the gas outlet which are of an equal outer diameter and a third circumferential portion interposed between the first and second portions and having a greater outer diameter than the latter, thus defining a first bevelled area between the first and the third circumferential portion and a second bevelled area between the second and the third circumferential portion, a catalyst carrier in the form of a monolithic, porous ceramic body coated with catalyst, and resilient support means for mounting the catalyst carrier within the shell, one of the tubular members having an outer diameter which is greater than the third circumferential portion of the shell and being internally provided with a stop at a given distance from the end thereof which is of an inner diameter which is greater than the outer diameter of the first and second circumferential portions and less than the outer diameter of the third circumferential portion of the shell, the converter being held between the tubular members by the engagement of a selected bevelled area of the shell with the stop of said one tubular member and the engagement of the shell against the end of the other tubular member.

4,158,038

METHOD AND APPARATUS FOR REDUCING RESIDUAL STRESSES IN CRYSTALS

David N. Jewett, Harvard, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jan. 24, 1977, Ser. No. 761,949

Int. Cl.[2] B01J *17/18*

U.S. Cl. 422—249 **13 Claims**

1. In an apparatus for growing a substantially monocrystalline body of a selected material from a melt of the same comprising means for establishing a melt/solid growth interface and drawing means for drawing a growing substantially monocrystalline body progressively from said interface along a predetermined axis, the improvement comprising a temperature profile controller for controlling the temperature distribution along the length of said body so as to reduce thermal stresses, said temperature profile controller including a heat flow means which is located between said means for establishing a melt/solid growth interface and said drawing means, said heat flow means comprising at least one block of heat conductive material elongated lengthwise of said axis and defining a passageway bounded at least in part by said heat conductive material through which said body may be drawn, said heat flow means having first and second opposite ends spaced along said axis with said second end being located farthest from said means for establishing a melt/solid growth interface, solid heat insulating means disposed on the outside of said heat flow means and arranged so as to substantially prevent radiative loss of heat laterally from said heat flow means, heating means for providing heat to said heat flow means at said first end thereof adjacent to said means for establishing a melt/solid growth interface, and solid heat sink means for removing heat from the second end of said heat flow means, whereby said heat insulating means and said heat sink means coact so as to cause conduction to be the predominant heat flow process at all points along the length of said heat flow means.

4,158,039

PRESSURE VESSEL FOR SEPARATING SULFUR FROM AN AQUEOUS SULFUR SUSPENSION

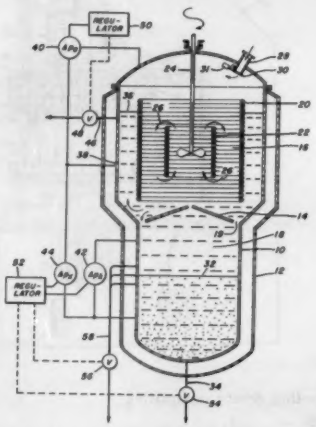
Hansjürgen Ullrich, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Jul. 21, 1977, Ser. No. 817,655

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635862

Int. Cl.[2] C01B *17/08*

U.S. Cl. 422—262 **10 Claims**



1. Apparatus for continuously separating sulfur from an aqueous sulfur suspension which is heated above the melting point of sulfur, comprising a pressure vessel having heating and stirring means in its upper portion, said heating and stirring means comprising annular coaxial heating coils extending along said upper portion and propeller means coaxially disposed within the annular space surrounded by the heating coils for causing the contents of said upper portion to circulate around said heating coils, the lower portion of the vessel serving as a settling tank and having an outlet for separated sulfur at its bottom, means to introduce an aqueous sulfur suspension into the upper portion of the vessel, and a substantially horizontal, shallow conical partition located between the upper and lower portions and beneath said heating and stirring means, the side wall of the vessel defining with said partition at least one opening to pass therethrough an aqueous sulfur suspension from the upper portion into the lower portion of the vessel.

4,158,040

RAPID STERILIZATION EVALUATOR AND TEST APPARATUS

Peter T. Miraldi, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Mar. 20, 1978, Ser. No. 888,571

Int. Cl.[2] A61L *3/02;* **B01J** *3/04;* **G01N** *1/02*

U.S. Cl. 422—297 **11 Claims**

1. A rapid sterilization evaluator and test apparatus comprising,

a media chamber **11** and a work chamber **12**,

said media chamber **11** comprising,

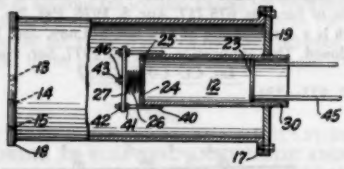
a sealed chamber having an opening in one side thereof receiving an end of said work chamber,

check valve means **24** connecting said work chamber with said media chamber,

a piston in said work chamber **12**,

means on said piston for supporting an article to be sterilized, and means on said piston extending beyond said article sup-

port means for operating said check valve when said piston is pushed into said work chamber thereby allowing atmospheric conditions in said media chamber to enter said work chamber.



4,158,041

SEPARATION OF ILMENITE AND RUTILE

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 21, 1978, Ser. No. 879,419
Int. Cl.[2] C01G 23/04
U.S. Cl. 423—80 **3 Claims**

1. In a method for the separation of rutile and ilmenite from a titanium bearing source containing titanium metal values which method comprises subjecting said source to a reductive roast at a temperature in the range of from about 650° to about 1000° C., treating said roasted source with an aqueous hydrogen chloride leach solution at a pH of from about 6 to about 8 and at an elevated temperature of from about 85° to about 105° C. to solubilize titanium metal values, separating said solubilized titanium metal values from the solid leach tails comprising ilmenite, rutile, and a gangue comprising silica, mica, and quartz, separating said ilmenite and rutile of said solid leach tails by charging said solid tails to a flotation collector containing a water slurry wherein said gangue sinks to the bottom of said water slurry flotation collector, and recovering said ilmenite and rutile from the surface of said collector, the improvement which comprises effecting a roast of said recovered ilmenite and rutile recovered from said collector in a hydrous atmosphere to convert the metallic iron of said ilmenite to a magnetic state and separating said magnetic ilmenite from the non-magnetic rutile.

4,158,042

RECOVERY OF ALUMINA FROM SILICEOUS MINERALS

John E. Deutschman, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Sep. 27, 1978, Ser. No. 946,345
Claims priority, application United Kingdom, Oct. 7, 1977, 41916/77
Int. Cl.[2] C01F 7/20
U.S. Cl. 423—126 **7 Claims**

1. A process for the production of alumina from siliceous materials containing substantial quantities of combined aluminium and calcium, comprising the steps of:

(i) grinding the mineral to a fine particle size;

(ii) treating the ground mineral with a hot acid liquor containing chloride, fluoride and calcium ions to extract alumina values from said mineral;

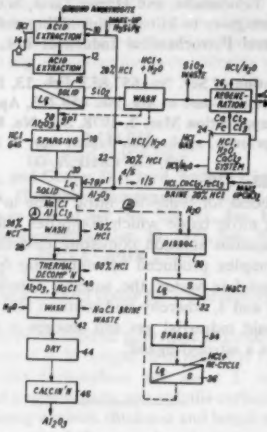
(iii) separating the acid extract from the spent mineral residues;

(iv) sparging the separated extract to precipitate aluminium chloride;

(v) separating the precipitated aluminium chloride from the spent acid extract;

(vi) recycling one fraction of the spent extract to the mineral extraction stage (ii);

(vii) evaporating another fraction of the spent extract to dryness and heating the solid residue with active silica in the presence of water vapour to regenerate hydrogen chloride gas;



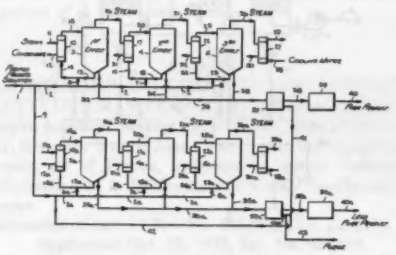
(viii) recycling the regenerated hydrogen chloride gas directly to the extraction stage (ii) and/or sparging stage (iv) or absorbing said gas in water for recycling.

4,158,043

PROCESS FOR PRODUCING SODA ASH FROM NATURAL ALKALI METAL CARBONATE-CONTAINING ORES

Arthur Gloster, New York, N.Y., assignor to Texasgulf Inc., Stamford, Conn.

Filed Jan. 18, 1978, Ser. No. 870,580
Int. Cl.[2] C01D 7/00
U.S. Cl. 423—206 T **8 Claims**



1. In a process for the production of soda ash wherein a substantially purified and saturated solution of sodium carbonate derived from an alkali metal carbonate-containing mineral is subjected to crystallization to effect formation of sodium carbonate-containing crystals, the improvement comprising:

(a) dividing said saturated solution of sodium carbonate into at least first and second separate streams;

(b) effecting crystallization of sodium carbonate-containing crystals from said first stream in the complete absence of recycled mother liquor;

(c) effecting crystallization of sodium carbonate-containing crystals from said second stream in the presence of recycled mother liquor;

(d) separately processing said crystals from each of said first and second streams to produce soda ash products of differing purity.

4,158,044

METHOD FOR REMOVING NITRIC OXIDE FROM INDUSTRIAL GASES

Masaharu Takabatake, and Haruo Tarui, both of Ichiharashi, Japan, assignors to Mitsui Shipbuilding and Engineering Co. and Mitsui Petrochemical Industries Ltd., both of Tokyo, Japan

Continuation of Ser. No. 657,853, Feb. 13, 1976, which is a continuation-in-part of Ser. No. 459,283, Apr. 9, 1974. This application Mar. 2, 1978, Ser. No. 882,562

Claims priority, application Japan, Apr. 9, 1973, 48-40165

Int. Cl.[2] C01B *21/00*

U.S. Cl. 423—235 9 Claims

1. A process for removing nitric oxide in an industrial gas containing nitric oxide which comprises contacting said gas with an aqueous solution consisting essentially of a ferrous chelate complex produced by combining ferrous ion and a chelate ligand in water, the aqueous solution having a pH between 2 and 3, whereby said solution reacts with the nitric oxide in said industrial gas and absorbs it into said chelate complex as a nitrosyl ligand.

4,158,045

CONTINUOUS PROCESS FOR CLEANING INDUSTRIAL WASTE GASES CONTAINING FORMALDEHYDE

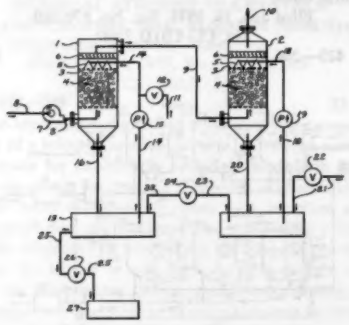
Johann Schäffer, Gelnhausen-Meerholz, and Willi Horrix, Hasselroth-Neuenhasslau, both of Fed. Rep. of Germany, assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 12, 1977, Ser. No. 860,007

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741929

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—245 5 Claims



1. A continuous process for cleaning industrial waste gases containing formaldehyde, which comprises scrubbing the waste gases in a first scrubbing zone with a first aqueous scrubbing solution containing hexamethylenetetramine and ammonium hydroxide, introducing ammonia to said zone, maintaining the hexamethylenetetramine content of the first scrubbing solution at at least 20% by weight by circulating the first scrubbing solution through the first scrubbing zone, then scrubbing the waste gases with a second scrubbing solution in a second scrubbing zone, adding water to said second zone, maintaining the pH value of the second scrubbing solution at not more than 12 by circulating the second scrubbing solution through the second scrubbing zone, introducing a part of the second scrubbing solution continuously or discontinuously into the first scrubbing solution, and continuously or discontinuously removing a part of the first scrubbing solution from the system.

4,158,046

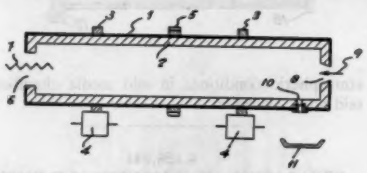
PROCESS FOR THE CONTINUOUS MANUFACTURE OF SOLID ALKALINE SILICATES

Jose F. Sugranes, Calle Serrerias, 57/59 Valencia, Spain

Division of Ser. No. 675,217, Apr. 8, 1976, Pat. No. 4,036,583, which is a continuation of Ser. No. 541,689, Jan. 16, 1975, abandoned. This application Apr. 28, 1977, Ser. No. 791,888

Int. Cl.[2] C01B *33/32*

U.S. Cl. 423—334 1 Claim



1. In a process for the continuous manufacture of solid alkali metal silicates, said process comprising providing a rotary furnace including an inclined rotary tubular body having a higher end, a lower end, and discharge means in the wall of said body at a position adjacent said lower end, said body being free of openings between said discharge means and said higher end, supplying silica and an alkali metal carbonate into said body through an opening in said higher end thereof, supplying heat to the interior of said body through said lower end thereof, while rotating said body, and progressively heating said silica and alkali metal carbonate to a temperature of approximately 1200° C. during passage thereof through the length of said body, to thereby form a reaction melt of alkali metal silicate, and continuously discharging said melt through said discharge means, the improvement comprising:

providing said discharge means as at least one outlet opening formed through the side wall of said body and a plurality of bushings selectively interchangeably positionable in each said at least one outlet opening, with each said bushing having therethrough an open passage smaller than said outlet opening, and with said open passages of said bushings being of different sizes; and

prior to said steps of supplying silica and an alkali metal carbonate, of supplying heat, and of rotating said body, selecting and inserting within each said at least one outlet opening a predetermined respective said bushing, the size of the open passage thereof being selected as a function of the viscosity of the said melt to thereafter be formed and of the speed of rotation and inclination of said body during such melt formation, to thereby control the rate of flow of said melt through said body, the level of said melt within said body and the rate of discharge of said melt from said body, such that said rate of discharge corresponds to the rate of melting and reaction of said silica and alkali metal carbonate to form said melt of alkali metal silicate within said body.

4,158,047

PROCESS FOR THE PREPARATION OF A HYDROXYLAMINE SALT

Cornelis G. M. van de Moesdijk, Elsloo, and Maria J. F. Smeets-Mertens, Nieuwenhagen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Aug. 30, 1977, Ser. No. 829,064

Claims priority, application Netherlands, Aug. 31, 1976, 7609656

Int. Cl.[2] C01B *21/14*

U.S. Cl. 423—387 8 Claims

1. A process for the inhibition of decomposition of hydroxylamine salts during the preparation of hydroxylamine,

which preparation includes the reduction in an aqueous acid medium of nitrate ions or of nitrogen monoxide in the

presence of a catalyst composition containing platinum or palladium or a combination of said metals,

which comprises subjecting, in the absence of hydroxylammonium salt, said catalyst to a pre-treatment of contacting the same with an aqueous salt solution having pH between about 1 and 3.5, and at a temperature between about 60° to 190° C., and with agitation, for a period of time requiring between about 5 to 80 hours, in the substantial absence of molecular oxygen.

4,158,048

PROCESSES FOR CONVERSION OF SULFUROUS ANHYDRIDE TO SULFURIC ANHYDRIDE AND VICE VERSA WITH A fe, cu, ALKALI METAL CONTAINING CATALYST

Phillippe Leclercq, Lille, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 763,224, Jan. 27, 1977, Pat. No. 4,127,509. This application Dec. 21, 1977, Ser. No. 862,730

Claims priority, application France, Mar. 11, 1976, 76 06974

Int. Cl.[2] C01B *17/68*

U.S. Cl. 423—533 **5 Claims**

1. A process for the interconversion of gaseous sulfur dioxide and sulfur trioxide, the process being carried out with sulfur dioxide and oxygen to produce sulfur trioxide or with sulfur trioxide to produce sulfur dioxide and oxygen, which process comprises passing the gaseous sulfur dioxide and oxygen or sulfur trioxide at a temperature of at least about 550° C. over a catalyst consisting essentially of iron, copper, and at least one alkali metal which is sodium or potassium and which is present in an atomic amount greater than the atomic amount of iron, the atomic ratio of copper to iron being from about 0.1 to 0.55 and the atomic ratio of alkali metal to iron being from 1.3 to 3.2.

4,158,049

ANTIGEN FRACTION OF *SCHISTOSOMA MANSONI* EGGS SUITABLE FOR TESTING FOR SCHISTOSOMIASIS

Ronald P. Pelley, Cleveland, and Kenneth S. Warren, Cleveland Heights, both of Ohio, assignors to Edna McConnell Clark Foundation, New York, N.Y.

Filed Sep. 27, 1976, Ser. No. 727,205

Int. Cl.[2] G01N *33/16*; A61K *39/00, 43/00*

U.S. Cl. 424—1 **12 Claims**

1. A fraction of *Schistosoma mansoni* egg antigen specific to *Schistosoma mansoni* mature eggs, and which has the following properties:

Polyacrylamide gel R.F.	0.34 ± 0.01
Staining	
Protein (Coomassie Blue)	+
Carbohydrate (Periodic acid, Schiff reagent)	+
Lipid (Sudan Black)	–
Concanavalin A Binding	Tightly Adsorbed
CsCl Buoyant Density	1.43 ± .01 g/cc (homogeneous)
MOLECULAR WEIGHT	
Gel Fitration	148,000 ± 5,000
Velocity Sedimentation	90–100,000
Polyacrylamide gel (R.F.)	50,000 (.50)
Charge (Isoelectric Point)	pH 3.514 4.5

said fraction being suitable to detect Schistosomiasis.

4,158,050

METHOD FOR EFFECTING FEMALE STERILIZATION WITHOUT SURGERY

Jaime Zipper, Santiago, Chile, assignor to International Fertility Research Programe Research Triangle Park, N.C.

Filed Jun. 15, 1978, Ser. No. 915,956

Int. Cl.[2] A61K *9/02, 31/435*

U.S. Cl. 424—14 **4 Claims**

1. In a nonsurgical method for female sterilization wherein a liquid suspension of quinacrine hydrochloride is introduced into the uterine cavity in one or more treatments to effect an occlusion of the utero-tubal junction, the improvement which comprises applying said quinacrine hydrochloride in the form of a solid pellet having the configuration of a cylinder with rounded heads, a diameter of less than 4 millimeters and containing about 10 mg. of quinacrine hydrochloride per millimeter of length.

4,158,051

PET COLLAR

Jack Greenberg, and Grover D. Cloyd, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 758,271, Jan. 10, 1977, abandoned. This application Dec. 29, 1977, Ser. No. 865,770

Int. Cl.[2] A01K *27/00*

U.S. Cl. 424—28 **7 Claims**

1. A flea and tick control collar for a warm-blooded animal comprising:

a strip of flexible plasticized polyvinyl chloride containing between about 5 to 20 weight % of dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate and about 2 to about 12 weight % of a substantially non-volatile carbamate insecticide and having a width, thickness and length sufficient to encircle the neck of the animal with clamping means at one end of the collar for engaging a spaced collar portion to prevent loss of the collar from the neck of the wearing animal; said strip being formed from a dispersion of plasticized polyvinyl chloride, dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate, a substantially non-volatile carbamate and a surface porosity control component selected from the group consisting of chloroacetaldehyde, dichloroacetaldehyde, chloral, bromoacetaldehyde, dibromoacetaldehyde, bromal, bromodichloroacetaldehyde, chlorodibromoacetaldehyde, bromochloroacetaldehyde, 2-bromopropanol and mixtures thereof, said dispersion being heated to its curing temperature to produce surface openings in communication with pores in said strip by vaporization of said porosity control component to provide for release of dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate gas and said carbamate at a rate effective to control fleas and ticks on said animal throughout a period of at least about 90 days.

4,158,052

OIL-FREE ADJUVANT COMPOSITIONS CONTAINING N-ACETYL-MURAMYL-L-ALANYL-D-ISOGLUTAMINE

Françoise Audibert, Neuilly; Louis Chedid, Paris; Pierre Lefrancier, Bures sur Yvette; Jean Choay, Paris, and Edgar Lederer, Sceaux, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 516,991, Oct. 22, 1974. This application Oct. 22, 1975, Ser. No. 624,994

Claims priority, application France, Sep. 26, 175, 75 29624

Int. Cl.[2] A61K *39/02, 39/04, 37/02*

U.S. Cl. 424—45 **31 Claims**

1. An adjuvant composition comprising an effective amount of N-acetyl muramyl-L-alanyl-D-isoglutamine and a pharmaceutically acceptable carrier, which composition is oil-free.

4,158,053

AQUEOUS EMULSION POLYMER NAIL COATING FORMULATIONS

James A. Greene, Carmel; Robert S. Nevin, Indianapolis, both of Ind., and Moustafa M. Sharabash, Egypt, assignors to Eli Lilly and Company, Indianapolis, Ind.

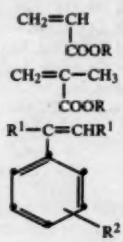
Filed Aug. 5, 1977, Ser. No. 822,040

Int. Cl.[2] A61K *7/04*

U.S. Cl. 424—61 **24 Claims**

1. A nail coating formulation which upon drying forms a

film which will adhere to keratin of the nail and has a moisture vapor transmission from about 0.1 to about 1.6 mg./cm.^{2}/hr., said formulation comprising an aqueous emulsion polymer having a solids content from about 30 to about 55 percent, the polymer having a T_g within the range of about $-10°$ C. to about 50° C. when measured by differential thermal analysis and being prepared by an aqueous emulsion polymerization of two or more of the following monomers, at least one of which is of formula I or formula II;



(I)

(II)

(III)

wherein R is C_1-C_{20} alkyl, phenyl, benzyl, hydroxy-(C_1-C_4)-alkyl, C_1-C_4 alkoxy-(C_1-C_4)alkyl, cyclopentyl, cyclohexyl, furyl, C_1-C_4 alkylfuryl, tetrahydrofuryl, or C_1-C_4 alkyltetrahydrofuryl; R^1 is hydrogen or methyl; and R^2 is hydrogen or C_1-C_3 alkyl, subject to the limitation that when R in one of the monomers is C_1-C_4 alkoxy-(C_1-C_4)alkyl, then R in the other monomer is a group other than C_1-C_4 alkoxy-(C_1-C_4)alkyl or hydroxy-(C_1-C_4)alkyl.

4,158,054

PREPARATION OF VIRUS SUB-UNIT VACCINES

Ian G. S. Furminger, Wirral, and Margaret I. Brady, Lydiate, both of England, assignors to Duncan Flockhart & Co. Ltd., Edinburg, Scotland

Continuation of Ser. No. 680,756, Apr. 27, 1976, abandoned, which is a continuation of Ser. No. 515,467, Oct. 17, 1974, abandoned. This application Feb. 21, 1978, Ser. No. 879,386

Claims priority, application United Kingdom, Oct. 18, 1973, 48685/73

Int. Cl.^{2} A61K *39/12, 39/18*

U.S. Cl. 424—89 **16 Claims**

1. A process for the preparation of a virus sub-unit vaccine derived from an ether-sensitive virus and being substantially free from pyrogens virion nucleic acids and unwanted antigenic material, including the step of introducing a liquid medium containing the inactivated whole virus into a continuous loading zonal ultracentrifuge provided with a density gradient solution containing a haemolytic surfactant, whereby the virions enter the density gradient and are split by the surfactant and the antigenic sub-units are banded isopycnically, the fraction or fractions containing the protective antigen sub-units subsequently being recovered.

4,158,055

ADMINISTRATION OF 16α,17α-CYCLOPENTYLIDENEDIOXY-9α-FLUOR O-11β,21-DIHYDROXY-1,4-PREGNADIENE-3,20-DIONE 21-ACETATE

Walter Shultz, Spring Valley, N.Y.; George M. Sieger, Montvale, and Charles Krieger, Clifton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 584,678, Jun. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 389,302, Aug. 17, 1973, abandoned. This application Dec. 28, 1976, Ser. No. 754,917

Int. Cl.^{2} A61K *31/58*

U.S. Cl. 424—241 **7 Claims**

1. A method of ameliorating inflammation in a mammal which comprises administering topically to said mammal an anti-inflammatory effective amount of 16α,17α-cyclopentylidenedioxy-9α-fluoro-11β,21-dihydroxy-1,4-pregnadiene-3,20-dione 21-acetate in association with a topical pharmaceutically acceptable carrier.

4,158,056

ANTIVIRAL METHOD

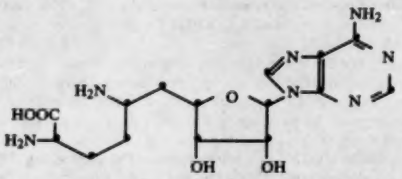
Ramakrishnan Nagarajan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 13, 1978, Ser. No. 924,129

Int. Cl.^{2} A61K *31/505*

U.S. Cl. 424—251 **9 Claims**

1. A method of controlling a virus infection in a mammal suffering from a virus infection wherein the virus is *Herpes simplex* or Pseudorabies which comprises administering to said mammal an antiviral effective amount of antibiotic A-9145 of the formula



or a pharmaceutically acceptable salt thereof.

4,158,057

PREVENTION OF THE ACCUMULATION OF FATTY DEPOSITS IN THE LIVER

Ronald T. Stanko, 596 Dorseyville Rd., Pittsburgh, Pa. 15238

Filed Mar. 28, 1975, Ser. No. 562,815

Int. Cl.^{2} A61K *31/525, 31/19, 31/12*

U.S. Cl. 424—252 **8 Claims**

1. A method of preventing excessive accumulation of fatty deposits in the liver of a mammal due to ingestion of ethanol which comprises administering orally to said mammal a therapeutic mixture of effective amounts of pyruvate and dihydroxyacetone.

4,158,058

TENSION REDUCING 1,2,3,4,4A,13B-HEXAHYDRO-DIBENZO[2,3;6,7]-THIEPINO[4,5-C]PYRIDINES

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

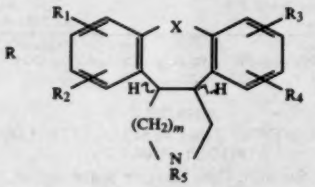
Division of Ser. No. 798,222, May 18, 1977. This application Jun. 26, 1978, Ser. No. 919,110

Claims priority, application Netherlands, May 24, 1976, 7605526

Int. Cl.^{2} A61K *31/445;* C07D *495/04*

U.S. Cl. 424—256 **30 Claims**

1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof;

wherein:

R_1, R_2, R_3, and R_4 each represent a member selected from

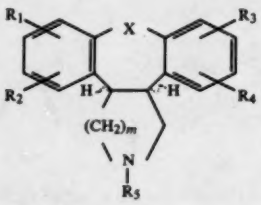
the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbons atoms;

X represents, sulfur and;

m represents the number 2.

30. Method of reducing tension in humans, comprising administering to a human a tension-reducing amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof;

wherein:

R_1, R_2, R_3, and R_4 represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkythio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents sulfur;

m represents the number 2.

4,158,059

TENSION REDUCING 2,3,4,4A,9,136-HEXAHYDRO-DIBENZ[1,2;5,6]CYCLOHEPTA[3,4-C]PYRIDINES

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

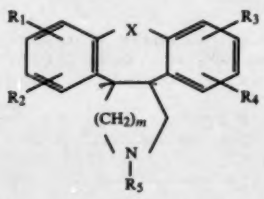
Division of Ser. No. 798,222, May 18, 1977. This application Jun. 23, 1978, Ser. No. 918,219

Claims priority, application Netherlands, May 24, 1976, 7605526

Int. Cl.[2] **A61K** *31/445;* **C07D** *221/18*

U.S. Cl. 424—267 **36 Claims**

1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof,

wherein:

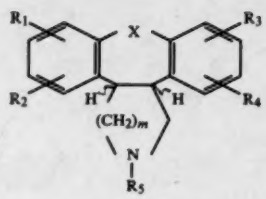
R_1, R_2, R_3, and R_4 each represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 atoms; atoms

X represents —CH_2—; and

m represents the number 2.

36. Method of reducing tension in humans, comprising administering to a human a tension-reducing amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof;

wherein:

R_1, R_2, R_3, and R_4 represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkythio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents —CH_2—;

m represents the number 2.

4,158,060

2-METHOXY-BENZAMIDE DERIVATIVES

Jean-Pierre Kaplan, Le Plessis-Robinson; Bernard M. Raizon, Vigneux-sur-Seine; Daniel C. L. Obitz, Orsay; Philippe M. J. Manoury, L'Hay-les-Roses; Henry Najer; Maurice Jalfre, both of Paris, and Don P. R. L. Giudicelli, Fontenay-sous-Bois, all of France, assignors to Synthelabo, Paris, France

Continuation of Ser. No. 641,180, Dec. 16, 1975, Pat. No. 4,021,567. This application Dec. 10, 1976, Ser. No. 749,282

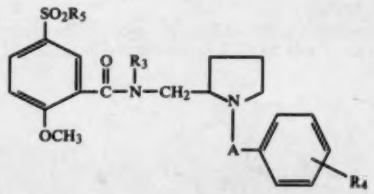
Claims priority, application France, Dec. 18, 1974, 74 41718; Oct. 14, 1975, 75 31334; Nov. 13, 1975, 75 34570

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.[2] **C07D** *207/08;* **A61K** *31/40*

U.S. Cl. 424—274 **18 Claims**

1. A compound of the formula



wherein

A is a linear or branched alkylene chain of 1 to 4 carbon atoms;

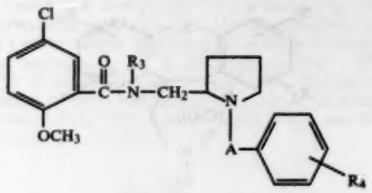
R_3 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_4 is hydrogen, halogen, trifluoromethyl, alkoxy of 1 to 3 carbon atoms or alkyl of 1 to 3 carbon atoms; and

R_5 is alkyl of 1 to 4 carbon atoms in the form of a racemate or optical isomer, or a pharmaceutically acceptable acid addition salt of said racemate or optical isomer.

8. A pharmaceutical agent capable of treating nervous and psychosomatic disorders which comprises an effective amount of the compound of claim **1** for treating said nervous and psychosomatic disorders and a compatible pharmaceutically acceptable carrier.

10. A compound of the formula



wherein

A is a linear or branched alkylene chain of 1 to 4 carbon atoms;

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_4 is hydrogen, halogen, trifluoromethyl, alkoxy of 1 to 3 carbon aoms or alkyl of 1 to 3 carbon atoms; in the form of a racemate or optical isomer, or a pharmaceutically acceptable acid addition salt of said racemate or optical isomer.

17. A pharmaceutical agent capable of treating nervous and psychosomatic disorders which comprises effective amount of the compound of claim **10** for treating said nervous and psychosomatic disorders and a compatible pharmaceutically acceptable carrier.

4,158,061

2,9-DIOXATRICYCLO[4,3,1,$0^{3,7}$] DECANE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Peter W. Thies, and Samuel David, both of Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

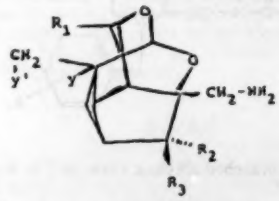
Division of Ser. No. 826,681, Aug. 22, 1977, Pat. No. 4,117,148, which is a continuation-in-part of Ser. No. 770,055, Feb. 18, 1977. This application Apr. 19, 1978, Ser. No. 897,802

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607106

Int. Cl.[2] **A61K** *31/335*

U.S. Cl. 424—278 **9 Claims**

1. A compound selected from the group of 3-aminomethyl-2,9-dioxatricyclo[4,3,1,$0^{3,7}$] decanes of the formula XL



(XL)

wherein:

R_1 represents alkyloxy or aralkyloxy;

one of R_2 and R_3 is hydrogen and the other represents hydroxy, acyloxy, or carbamyloxy, or R_2 and R_3 jointly represent oxygen; and

y and y' each represent hydrogen or jointly form a bond.

8. A pharmaceutical composition for sedating larger mammals comprising an inert carrier material and a sedatively effective amount of a compound as defined in claim **1**.

9. A method for sedating larger mammals, which comprises the step of administering to a larger mammal a sedatively effective amount of a compound as defined in claim **1**.

4,158,062

CYCLOPENTANE DERIVATIVES

Michael P. L. Caton; Edward C. J. Coffee, both of Upminster, England, and Gordon L. Watkins, Burbank, Calif., assignors to May & Baker Limited, Essex, England

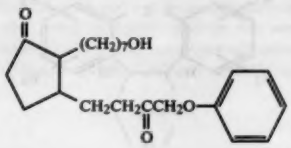
Filed May 24, 1978, Ser. No. 909,018

Claims priority, application United Kingdom, May 26, 1977, 22319/77

Int. Cl.[2] **A61K** *31/12*; **C07C** *49/28*

U.S. Cl. 424—331 **6 Claims**

1. A compound of the formula:



wherein the two side chains are attached to the ring carbon atoms in the trans configuration.

4,158,063

ACYLAMINO(ALKYL)BENZENE DERIVATIVES AND PROCESS FOR PREPARING THEM

Volker Hitzel, Hofheim; Rudi Weyer, Kelkheim, and Elmar Bosies, Heppenheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

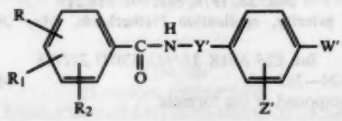
Filed Jan. 6, 1977, Ser. No. 757,290

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1976, 2600513

Int. Cl.[2] **A61K** *31/165*

U.S. Cl. 424—324 **7 Claims**

1. A pharmaceutical composition useful in the treatment of diabetes mellitus consisting essentially of an inert carrier and a hypoglycemically effective amount of a compound of the general formula:



wherein

R is H, alkyl, alkoxy, alkenoxy, alkoxy-alkoxy, phenoxy, halogen, amino, alkylamino, anilino or CF_3,

R_1, R_2 and Z' are independently hydrogen, alkyl, alkoxy or halogen,

W' is an aldehyde group, a hydroxymethyl group or lower alkyl and Y' is selected from $-CH_2-CH_2-$ and $-CH(CH_3)-CH_2-$.

4,158,064

MELTABLE HARD CANDY ARTICLE

Benjamin Banowitz, North Miami Beach, Fla., assignor to TV Time, Inc., Chicago, Ill.

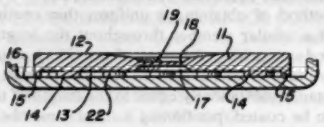
Filed Jan. 12, 1978, Ser. No. 868,815

Int. Cl.[2] **A23G** *3/00*

U.S. Cl. 426—76 **6 Claims**

6. A method of preparing a precooked hard candy composition suitable for glaze-coating a food article in melted form without burning or scorching the hard candy composition which forms on cooling, a brittle, non-sticky coating, said method comprising; forming a hard candy composition containing a maximum moisture content of 6% by wt. into a bar having a main body section with generally planar upper and lower surfaces having a plurality of spaced projections extend-

ing downwardly below the plane of the lower surface and a continuous peripheral skirt which extends downwardly along the entire periphery of the bar below the plane of the main body section the same distance as the said projections, placing said bar in a cooking vessel having a flat bottom with said



peripheral skirt enclosing a quantity of water on said flat bottom of the cooking vessel, and heating the said vessel to effect melting of the hard candy composition while heated water and water vapor are retained in an enclosure formed by the main body section and peripheral skirt together with the flat bottom of the cooking vessel.

4,158,065

CRAB MEAT SUBSTITUTE AND METHOD OF PREPARING SAME

Yoshito Sugino, Nanao, Japan, assignor to Sugiyo Co., Ltd., Nanao City, Japan

Filed Dec. 16, 1977, Ser. No. 861,217
Int. Cl.[2] A22C *25/00*; A23L *1/325*
U.S. Cl. 426—104 **12 Claims**

4. A method of preparing a crab meat substitute which is similar in taste and texture to crab meat comprising the steps of:

a. mashing surimi;

b. heating the mashed surimi in a mold for a time sufficient to solidify the mashed surimi to a solid mass having a jelly strength of from about 300 g. to about 1500 g.; and

c. shredding the solid mass of surimi into fiber like pieces of about 0.25 to 3.0 mm in width and up to about 2.25 mm^2 in cross-sectional area.

accharin, and

4,158,066

STABILIZATION OF RICE POLISH

Vincent J. Kelly, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed Jul. 21, 1978, Ser. No. 926,776
Int. Cl.[2] A23K *3/02*
U.S. Cl. 426—419 **3 Claims**

1. A method for stabilizing rice polish comprising reducing the moisture content of said rice polish into the mono layer range of 5.8 to 8.0 grams of moisture/100 grams of fat free solids.

4,158,067

COFFEE EXTRACTION

Hermanus A. J. Wouda, Utrecht, Netherlands, assignor to D.E.J. International Research Company B.V., Utrecht, Netherlands

Filed Sep. 1, 1977, Ser. No. 829,946
Claims priority, application United Kingdom, Sep. 18, 1976, 38797/76
Int. Cl.[2] A23F *1/08*
U.S. Cl. 426—432 **7 Claims**

1. Process for the preparation of extracts from ground roasted coffee comprising subjecting the ground roasted coffee sequentially to the following treatment steps:

(a) exhaustive extraction of the solubles at a temperature in the range of 60°–120° C. at which no substantial hydrolysis of coffee solids occurs, this extraction comprising countercurrent leaching with an aqueous solvent, said leaching resulting in removing at least substantially all the non-volatile soluble solids and draining the grounds to at least substantially reduce the free water present between coffee particles;

(b) heating the coffee grounds after said extraction for two to thirty minutes to a temperature in the range of 140°–200° C., at which coffee solids, insoluble at the temperature mentioned under (a), are transformed into substances extractable in step (c), said heating being accomplished substantially in the absence of extracted substances extracted in step (c);

(c) exhaustive countercurrent leaching of the heated grounds with water at a temperature within the same temperature range as that used for step (a).

4,158,068

SWEETENER MIXTURE

Gert-Wolfhard Von Rymon Lipinski, and Erich Lück, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1977, Ser. No. 808,987
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628294
Int. Cl.[2] A23L *1/236*
U.S. Cl. 426—548 **5 Claims**

1. A sweetener mixture having an improved saccharose-like taste and consisting of

(a) the potassium salt of 3,4-dihydro-6-methyl-1,2,3-oxathiazine-4-one-2,2-dioxide and

(b) a further sweetener selected from the group consisting of

(i) aspartyl phenyl-alanine methyl ester,

(ii) the sodium salt of cyclohexyl sulfamic acid,

(iii) the sodium salt of

(iv) neohesperidin-dihydrochalcone,

wherein the ratio by weight of (a) to (b) in such a mixture is from 1:10 to 10:1 for sweetener (b) (i), 3:1 to 1:12 for sweetener (b) (ii), 1:2 to 10:1 for sweetener (b) (iii), and 5:1 to 20:1 for sweetener (b) (iv).

4,158,069

ENRICHED WHEAT MACARONI

Duane S. Cox, 7049 Rhodes, Mackenzie, Mo. 63123

Filed Oct. 4, 1977, Ser. No. 839,186
Int. Cl.[2] A23L *1/16*
U.S. Cl. 426—557 **8 Claims**

1. An enriched wheat macaroni product comprising a major portion of about 78% to about 92% of semolina as the principal protein source, a minor portion of another protein source including at least 2.0% of one milk fraction protein ingredient, and an added amount of about 0.5% to about 1.0% of the amino acid L Lysine, such added amount of said amino acid being in addition to the amount thereof naturally present in free and combined form in the other ingredients, whereby said product in finished cooked form has a protein quantity of at least 20% and a protein quality of at least PER 2.50.

4,158,070

SELECTIVE COOLING OF SHEET TO BE EMBOSSED

Walter J. Lewicki, Jr., Lancaster, and William M. McQuate, Denver, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

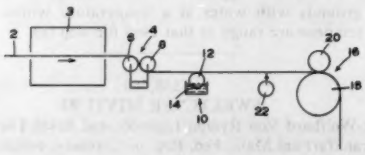
Filed Jun. 26, 1978, Ser. No. 919,168
Int. Cl.[2] B05D *5/00*
U.S. Cl. 427—8 **2 Claims**

1. In a process for embossing a web of material wherein said material is composed of a composite structure having at least a carrier and a thick foam layer, said foam layer on the surface thereof adjacent the surface to be embossed having a decorative pattern printed thereon, said above composite structure being in the form of a web which is heated in an oven to a temperature of about 250° F. to 350° F., comprising the steps of:

(a) after the carrier of the web leaves the oven, wetting the

carrier of the web, which is the back surface of the web, so as to lower the temperature of the back surface of the web approximately 100° below the top surface of the web, which is the surface to be embossed, except where there may be local heat retention in some hot spot areas of the web resulting in a top surface-back surface temperature difference of less than approximately 100° F.;

(b) embossing the top surface of the web with an embossing roll and back-up roll;



(c) cooling the embossing surface of the web to set the embossed pattern in the web;

(d) the improvement comprising:

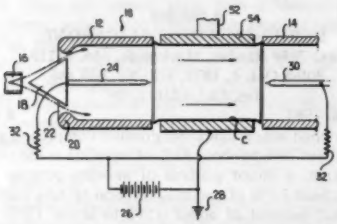
(1) prior to embossing the top surface of the web with an embossing roll and back-up roll, selectively and intermittently cooling the back surfaces of said hot spot areas to obtain a top surface-back surface temperature difference of approximately 100° F.

4,158,071

METHOD AND APPARATUS FOR POWER COATING OF THREE-PIECE CANS

Thomas F. Jordan, Oak Park, and Robert D. Payne, Countryside, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Sep. 9, 1977, Ser. No. 831,980
Int. Cl.[2] B05B *5/02*
U.S. Cl. 427—33 **11 Claims**



1. An apparatus for electrostatically coating the interior of a tubular member with a powder, said apparatus comprising a supply tube and a recovery tube positioned in axial alignment and being axially spaced to have a tubular member received therebetween in adjacent relation, means for supplying powder to said supply tube for flow therethrough and into a tubular member positioned between said supply tube and said recovery tube, a first corona electrode positioned within said supply tube for charging powder passing through said supply tube, and a second corona electrode positioned within said recovery tube for cooperation with said first corona electrode to form an electrical field between said first and second corona electrodes in the space between said supply tube and said recovery tube with said electrical field forming means for additionally charging powder deposited in a tubular body adjacent opposite ends thereof.

6. An apparatus for use in electrostatically coating the interior of a tubular member with a powder, said apparatus comprising a supply tube, means including a supply passage materially smaller than said supply tube for supplying powder to said supply tube, and a diverter positioned between said supply passage and said supply tube for directing powder radially outwardly within said supply tube wherein powder flowing through said supply tube is concentrated adjacent the internal surface of said supply tube, said supply tube having an entrance end of a curved increasing cross section cooperating with said diverter to effect the concentrated flow of powder adjacent the internal surface of said supply tube, and said diverter terminating in advance of said curved entrance end.

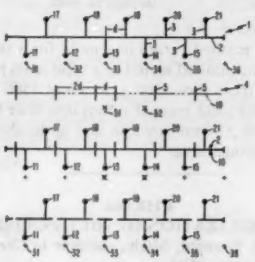
9. A method of obtaining a uniform thin coating on the interior of a tubular member throughout the length thereof, said method comprising the steps of providing a supply tube and a return tube in axial alignment and spaced apart longitudinally a distance substantially equal to the length of the tubular member to be coated, positioning a tubular member between the supply tube and the return tube in alignment therewith, directing powder into the tubular member from the supply tube, and electrostatically charging the powder both within the supply tube and within the tubular member by means of energized corona electrodes positioned in both the supply tube and the return tube.

4,158,072

METHOD FOR MAKING CONNECTIONS BETWEEN CONTACTS

Armin Bohg, Ehningen; Marian Briska, and Bernd Garben, both of Boblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,676
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632548
Int. Cl.[2] B05D *5/12;* B41M *3/08;* H05K *1/04, 3/00*
U.S. Cl. 427—43 **12 Claims**



1. The method for interconnecting n pairs of contacts between a first group of n contacts and n contacts of a second group of at least n+1 contacts on a substrate, where n is a positive integer, comprising the steps of:

disposing a first set of n and a second set of n+1 points alternatingly along at least one path of constant curvature, each of said points in said sets being associated with a different one of said contacts in said first and second groups of contacts, said points being disposed a distance d from each other along said path;

providing a tool comprising two adjacent sets of parts arranged along at least one line having the same constant curvature as said path, the parts of each set of parts being distributed along said line by a distance 2*d* within sets and the spacing of adjacent parts between said sets of parts being spaced apart a distance which differs by about one half of the distance 2*d* between parts of the same set;

positioning said tool to provide alignment between said line and said path and aligning said parts with said points such that said adjacent parts between said sets of parts are substantially symmetrically aligned with one of said second set of points positioned between said parts; and

simultaneously providing at least the image of isolated conductive connections between pairs of contacts associated with each of said n contacts of said first group of contacts and n of the remaining contacts of said second group of n+1 contacts, the contact associated with said one of said

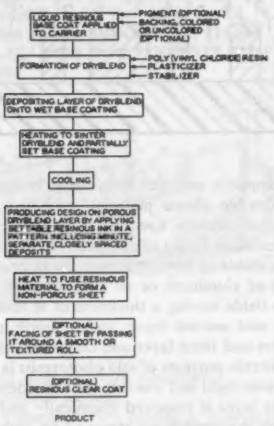
second set of points positioned between said parts being isolated.

4,158,073

PROCESS FOR PRODUCING DECORATIVE MULTI-LEVEL EMBOSSED SURFACE COVERING

Donald E. Schneider, Lititz; George A. Tudor, and Gary E. Williams, both of Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 23, 1978, Ser. No. 889,532
Int. Cl.[2] B05D 5/00
U.S. Cl. 427—195 11 Claims


LIQUID RESINOUS BASE COAT APPLIED TO CARRIER
PIGMENT (OPTIONAL)
BACKING, COLORED OR UNCOLORED (OPTIONAL)
FORMATION OF DRYBLEND
POLY (VINYL CHLORIDE) RESIN
PLASTICIZER
STABILIZER
DEPOSITING LAYER OF DRYBLEND ONTO WET BASE COATING
HEATING TO SINTER DRYBLEND AND PARTIALLY SET BASE COATING
COOLING
PRODUCING DESIGN ON POROUS DRYBLEND LAYER BY APPLYING SETTABLE RESINOUS INK IN A PATTERN INCLUDING MINUTE, SEPARATE, CLOSELY SPACED DEPOSITS
HEAT TO FUSE RESINOUS MATERIAL TO FORM A NON-POROUS SHEET
(OPTIONAL) FACING OF SHEET BY PASSING IT AROUND A SMOOTH OR TEXTURED ROLL
(OPTIONAL) RESINOUS CLEAR COAT
PRODUCT

1. The process for producing a surface covering having a decorative multi-level wear surface including embossed portions which differ in elevation and shading, the shading and embossing being in register with each other, said process comprising

(a) depositing a plastisol coating onto the upper surface of a carrier;

(b) depositing at least one layer of unfused thermoplastic granules of resinous dryblend onto the plastisol coating while said coating is still wet;

(c) heating to gel the plastisol coating and cause partial melting of at least surface portions of the dryblend granules at their points of contact;

(d) cooling and thereby forming bonds between adjacent granules of the resinous dryblend to form a cohesive, porous layer;

(e) producing a design on said cohesive porous layer by applying at least one settable resinous ink to at least a portion of the upper surface thereof in sufficient amounts and viscosities to permit penetration thereof through at least 10 mils (0.254 mm) of its thickness at the points of application, said design including fully printed and completely non-printed areas, and at least portions of said design being formed by applying the ink in minute, closely spaced dots, the adjacent edge portions of
ity of which are variably separated from each other in distances ranging from about 5 to 60 mils (0.13 to 1.52 mm) by non-ink-containing portions of the dryblend layer to control the overall elevation and shading, in the ultimate finally fused sheet, of the dot-containing design portions and the non-ink-containing portions of the sheet between the dots, these elevations decreasing as the spacings of the dots increase; and

(f) heating the composite sheet for final fusion of all resinous material to form a non-porous sheet wherein the portions of the design containing the dots differ in elevation and shading from that of the fully printed and completely non-printed design portions thereof.

4,158,074

PROCESS FOR PREPARING COLORED ALUMINUM POWDER

Toshimitsu Uchiyama; Minoru Hasegawa; Tatsuo Ootsuka, and Hiroshi Matsumoto, all of Sakai, Japan, assignors to Showa Aluminum Kabushiki Kaisha, Sakai, Japan

Continuation-in-part of Ser. No. 694,745, Jun. 10, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,538
Claims priority, application Japan, Jun. 19, 1975, 50-75117
Int. Cl.[2] C09C 1/00
U.S. Cl. 427—214 6 Claims

1. A process for preparing a colored aluminum powder consisting essentially of the steps of immersing finely divided aluminum in a weak alkali solution maintained at a temperature of between 50° C. and the boiling point of the solution and having a pH of 8 to 12, said solution containing a salt of a metal selected from the group consisting of iron, nickel, cobalt, zinc and copper, and at least one amine selected from the group consisting of methylamine, dimethylamine, ethylamine, ethylenediamine, monoethanolamine, diethanolamine and triethanolamine, to form a composite film which consists of a hydrated aluminum oxide and a hydrated oxide of the metal, and separating the resulting aluminum particles from the solution to obtain colored aluminum particles.

4,158,075

STABILIZERS FOR CHLORINE-CONTAINING RESINS AND PROCESS FOR PRODUCING THE SAME

Katsuhiko Tanioka, Shiga; Toshihiko Matsuzawa; Noboru Iida, both of Otsu; Naoji Makino, and Itirow Hayasaka, both of Kawasaki, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka and Shinagawa Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 632,036, Nov. 14, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,634
Int. Cl.[2] B05D 7/24
U.S. Cl. 427—220 3 Claims

1. A process for producing a thermal stabilizer for chlorine-containing resins which comprises calcium hydroxide coated with a calcium salt of an organic acid selected from the group consisting of saturated fatty acids having 10–22 carbon atoms and mixtures thereof, where calcium hydroxide and said organic acid are reacted at a molar ratio of 1 mole of calcium hydroxide: not more than 2 moles of said organic acid, in the presence of an aqueous medium and a surface active agent selected from the group consisting of polyoxyethylene alkylphenyl ethers, polyoxyethylene alkyl ethers, polyoxyethylene alkyl esters, fatty acid salts, sulfuric acid esters of higher alcohols, sulfuric acid esters of aliphatic amines or amides, quaternary ammonium salts and mixtures thereof, while heating and stirring at about 90° to 100° C., to convert the outer surface of the calcium hydroxide into a calcium

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4,158,076

COATING DELIVERED AS BUBBLES

Hans I. Wallsten, Lausanne, Switzerland, assignor to Inventing S.A., Lausanne, Switzerland

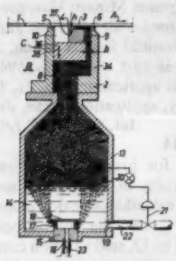
Filed Dec. 29, 1977, Ser. No. 865,389
Claims priority, application Sweden, Jan. 3, 1977, 7700045
Int. Cl.[2] B05D 1/26
U.S. Cl. 427—294 10 Claims

1. A method of treating a moving surface with a treating agent comprising the steps of:

delivering the treating agent through a passage of a container and in the form of a foam of an application zone adjacent the surface to be treated;

providing a region of reduced pressure and moving the foam between said moving surface and an extended surface of the container towards said region of reduced pressure, causing bubbles in the application zone and adjacent said surface to burst as they enter into the region of the pressure drop at a location upstream of the application zone,

whereby said treating agent is applied to said moving surface; and



allowing gas liberated from the burst bubbles to exit through an opening in the application zone.

4,158,077

FLAME RETARDANTS FOR SYNTHETIC MATERIALS (I)

Vladimir Mischutin, Union City, N.J., assignor to White Chemical Corporation, Bayonne, N.J.

Division of Ser. No. 538,896, Jan. 6, 1975, abandoned, which is a division of Ser. No. 300,732, Oct. 25, 1972, abandoned. This application May 17, 1977, Ser. No. 797,767

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—381 **17 Claims**

1. The process of rendering a fibrous textile fabric of inherently flammable nature flame resistant that comprises dispersing in said fabric an organic brominated flame retardant compound having a melting point above 100° C., and a particle size of 0.1 to 10 microns in diameter, suspended in an aqueous suspension, drying and sequentially heating said fabric and compound to a temperature sufficient to melt said compound and effect impregnation of said fabric therewith; said melting point being from 20° C. to 30° C. below that at which said heating occurs and 10° C. to 20° C. higher than the temperature at which said drying is effected.

4,158,078

HEAT STRIP OR PANEL

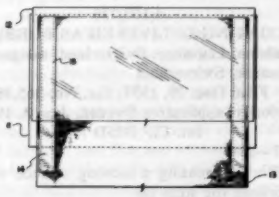
Lambert Egger, and Hubert Bildstein, both of Reutte, Austria, assignors to Huebner Bros. of Canada Ltd., Winnipeg, Canada

Filed Jan. 13, 1978, Ser. No. 869,058

Claims priority, application United Kingdom, Jun. 10, 1977, 24451/77

Int. Cl.[2] B32B *3/06, 17/10, 9/00*

U.S. Cl. 428—103 **12 Claims**



1. A heat strip or panel comprising a central flexible glass fibre core impregnated with electroconductive particles, flexible electrical contact strips sewn upon said core in substantially parallel alignment to one another, a cover panel of electrical insulating material laminated one upon each side of said core to enclose said core and said electrical contact strips, and electrical conductors operatively secured to said electrical contact strips and extending beyond the boundaries of said heat strip.

4,158,079

COMPOSITE MATERIAL AND A PROCESS AND DEVICE FOR ITS MANUFACTURE

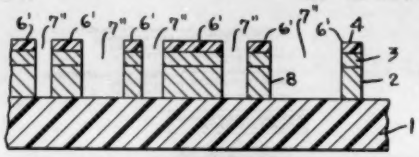
Harald Severus-Laubenfeld, Winterthur, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 489,417, Jul. 17, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,001

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1973, 2340962

Int. Cl.[2] B32B *7/00, 15/04*

U.S. Cl. 428—172 **9 Claims**



1. A composite material comprising in combination: a first layer of flexible plastic material exhibiting the property of ultra-violet absorption; a second layer having a specific thickness connected in facing relationship to said first layer with an adhesive capable of being removed by an organic solvent, and composed of aluminum or an alloy thereof; a third layer of aluminum oxide having a thickness of at least 3 microns, disposed on said second layer; and a fourth photoresist layer disposed on said third layer and composed of a light-sensitive plastic, wherein portions of said photoresist layer are hardened by ultra-violet light and wherein the unhardened portion of the photoresist layer is removed chemically and the second and third layers thereunder are removed by etching and wherein the adhesive thereunder is removed to expose the first layer.

4,158,080

GLASS ENAMEL FLUXES

Dale R. Wexell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,445

Int. Cl.[2] B32B *7/02, 17/06;* **C03C** *5/02*

U.S. Cl. 428—212 **8 Claims**

1. In a composite article consisting of an opal glass body and an adherent, high gloss, enamel, wherein

the opal glass has a softening point in excess of 760° C., a strain point in excess of 490° C. and a coefficient of thermal expansion (0°-300° C.) of 70-85$\times 10^{-7}$/°C.,

an enamel that has a 96 hour lead release below the FDA standard, a coefficient of expansion of 65-75$\times 10^{-7}$/°C. that is at least 5 units below the glass value, that fires to a high gloss in less than 10 minutes in a firing cycle having a maximum temperature less than 720° C., and wherein the enamel flux has a softening point of 550°-575° C., and is chemically composed essentially, in weight percent as calculated on the oxide basis, of 28-35% SiO_2, 45-55% PbO, 5-8% ZrO_2, 4-6% B_2O_3, 1-3% TiO_2, 1-2% Li_2O, and 0.5-2.0% M_2O (Na_2O+K_2O), the total Li_2O plus M_2O being not over 3%.

t leas·

4,158,081

VITREOUS ENAMEL FLUX AND ENAMEL COATED ARTICLE

Dale R. Wexell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,446

Int. Cl.[2] B32B *7/02, 17/06;* **C03C** *5/02*

U.S. Cl. 428—212 **12 Claims**

1. An enamel coated article comprising a glass or glass-ceramic body with a coefficient of thermal expansion below about 40$\times 10^{-7}$/°C. and having an adherent, high gloss

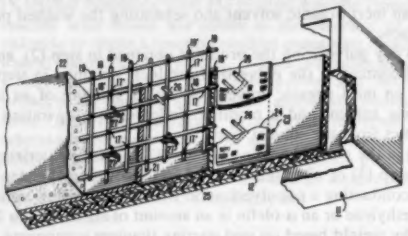
enamel fired on at least a portion of the body's external surface, the enamel flux having a coefficient of thermal expansion in the range of $48–70\times10^{-7}$/°C., a softening point below 660° C., lead and cadmium release values below FDA standrds and a chemical composition consisting essentially of, in percent by weight as calculated from the bath on an oxide basis, 25–40% SiO_2, 40–60% PbO, at least 75% $PbO+SiO_2$, 3–10% ZrO_2, 4–12% B_2O_3 and 0.2–2.0% Li_2O, optionally containing up to 2% Na_2O+K_2O and up to 4% CdO, and being free of TiO_2.

4,158,082

LAMINATED FERRO-CEMENT STRUCTURES AND METHOD OF FABRICATION

Bruce Belousofsky, R.D. #4, Box 463A, Sewell, N.J. 08080

Filed Jul. 27, 1977, Ser. No. 819,360
Int. Cl.² B63B *5/24, 5/20;* B32B *27/38*
U.S. Cl. 428—256 **15 Claims**



1. A laminated shell structure comprising
a resinous outercoat section;
a reinforced cement section having a wire armature reinforcement and a layer of cementitious material formed on said armature reinforcement;
and a plurality of coupling devices, each including a cloth sheet and at least one metallic fastening device having an elongated projecting portion extending through said armature and a transverse portion, said fastening device being secured by means of said transverse portion directly to said coupling cloth sheet;
said coupling devices being connected to said outercoat and cement structure with said coupling cloth sheet bonded to said outercoat, said projecting portion secured to said wire armature at one side of said cloth sheet, and said transverse portion being secured between said cloth sheet and said outercoat at the other side of said cloth sheet.

13. A ferro-cement molding process using a female mold comprising the steps of:
applying a resinous layer to said mold along with a cloth reinforcement and curing said reinforced layer;
applying coupling devices to said reinforced layer, which devices include lengths of cloth sheet having tying devices secured therethrough and projecting outwardly therefrom, and bonding said coupling cloth sheets to said reinforced layer;
applying a metal armature reinforcement over said reinforced layer and projecting tying devices, and tying said devices firmly to said armature;
applying cementitious material to said armature and curing said material.

4,158,083

FIBROUS ARTICLE SIZED WITH A BRANCHED WATER-DISPERSIBLE POLYESTER

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 702,043, Jul. 15, 1976, abandoned. This application Mar. 29, 1978, Ser. No. 891,209
Int. Cl.² D02G *3/00*
U.S. Cl. 428—389 **9 Claims**

1. A sized fibrous article comprising fibers and a branched water-dispersible polyester comprising the reaction product of at least one polycarboxylic acid, at least one diol or polyglycol and at least one organic compound consisting of a carboxylic acid reactant which contains a sulfonate group and which is capable of rendering said polyester dispersible and further characterized as at least a monofunctional carboxylic acid consisting of the reaction product of an aromatic polycarboxylic acid, ester or anhydride derivative thereof and an hydroxysulfonic acid metallic salt wherein said hydroxysulfonic acid metallic salt has the formula:

$$HO—Q—SO_3M$$

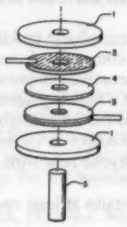
wherein Q is a bivalent hydrocarbon radical and M is an alkali metal.

4,158,084

HEAT SOURCES FOR THERMAL BATTERIES: EXOTHERMIC INTERMETALLIC REACTIONS

Jack L. Prentice, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1977, Ser. No. 770,246
Int. Cl.² H01M *6/20*
U.S. Cl. 429—112 **11 Claims**



1. A thermal battery comprising at least one cell having a cathode, an anode, a solid electrolyte between said cathode and anode and a heat source confined in a position relative to said electrolyte such that said heat source will melt said electrolyte when activated, said heat source being comprised of at least one foil of a first metal and at least one foil of a second metal, said foils being equal to or less than 0.025 mm. in thickness and being placed in a relationship to one another such that said first metal and said second metal will react together exothermically in a self-sustaining manner producing an exotherm great enough to melt said electrolyte upon activation.

4,158,085

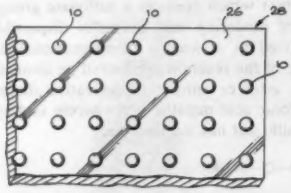
ELECTRODE WITH SEPARATOR BEADS EMBEDDED THEREIN

John M. Bilhorn, Mystic, Conn., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Jan. 31, 1978, Ser. No. 873,801
Int. Cl.² H01M *2/18*
U.S. Cl. 429—130 **8 Claims**

1. An improved electrode with integral electrode separator, said electrode having a hard metallic exposed surface bearing a plurality of discrete, spaced, electrically insulative embedded particles of sufficient diameter to separate said electrode surface from an adjacent electrode surface, said particles having a first coating adjacent to and over a major portion of the parti-

cle surface and a second coating on only a minor portion of the exterior of said first coating and contacting and adhering said



particle to said electrode surface, the electrode surface otherwise being free of said coatings.

4,158,086

FLAMEPROOF THERMOPLASTIC MOLDING MATERIAL

Helmut Hagen, Frankenthal; Herbert Naarmann, Watterheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,814

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734926

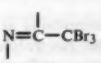
Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—90 **3 Claims**

1. A flameproof thermoplastic molding material based on a styrene polymer and containing from 0.05 to 5 percent by weight of an organic bromine compound as the flameproofing agent, with or without a blowing agent, wherein the bromine compound conforms to the following requirements:

(a) the compound contains in its molecule at least one six membered heterocyclic ring with at least one nitrogen as a hetero-atom,

(b) the molecule contains at least one



group, where —N=C— is a part of the heterocyclic ring,

(c) the compound is sufficiently heat-stable at 150° C. that the weight loss on heating for one hour at this temperature is less than 1%, and

(d) the compound is not a derivative of 1,3,4-thiadiazole.

4,158,087

URETHANE FOAMS HAVING LOW RESILIENCY

Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 27, 1977, Ser. No. 801,079

Int. Cl.[2] C08G *18/14, 18/62*

U.S. Cl. 521—137 **10 Claims**

1. A flexible hydrophilic polyurethane foam comprising the reaction product of (1) an NCO terminated polyoxyalkylene urethane prepolymer containing at least 40 mole percent of ethylene oxide units in the oxyalkylene portion of the prepolymer, (2) from about 40 to about 150 parts by weight on a solids basis based on 100 parts by weight of said prepolymer of an aqueous latex of a synthetic polymer having a solids content from about 20 to about 65 weight percent and (3) any additional water necessary to obtain a weight ratio of water to prepolymer from about 20 to 250:100 respectively.

4,158,088

PROCESS FOR THE POLYMERIZATION OF ETHYLENE OR α-OLEFINS AND CATALYST THEREFOR

Tetsuya Iwao, Zushi; Masahiro Kono, Manazuru; Heizo Sasaki, Tokyo, and Akira Ito, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 15, 1977, Ser. No. 816,066

Claims priority, application Japan, Jul. 15, 1976, 51-83504; Jul. 15, 1976, 51-83505

Int. Cl.[2] C08F *4/66, 10/06*

U.S. Cl. 526—128 **17 Claims**

10. A modified titanium catalyst for polymerization of ethylene or an α-olefin obtained by the steps of:

(1) wet pulverizing a starting titanium component comprising titanium trichloride or its compositions having titanium trichloride as the main component together with an inert organic solvent and a modifier,

(2) washing the pulverized products obtained in step (1) with an inert organic solvent and separating the washed products;

(3) dry pulverizing the products obtained in step (2), and

(4) contacting the pulverized products obtained in step (3) with an inert organic solvent or with a mixture of an inert organic solvent and a modifier, followed by separating the product from the solvent, and

(5) in the wet pulverizing of step (1), the dry pulverizing of step (3) or after the washing and separating the step (2), conducting a copulverization treatment together with (a) ethylene or an α-olefin in an amount of about 0.01 to 10% by weight based on said starting titanium component and (b) an organoaluminum compound of the formula

$$AlR_mX_{3-m}$$

wherein R is an alkyl or aryl group, X is hydrogen or a halogen atom and m is 1 to 3, wherein said modifier in steps and (4) is selected from the group consisting of (i) an oxygen-, sulphur-, phosphor-, nitrogen- or silicon-containing organic compound, (ii) a combination of said organic compound of the item (i) with an aluminum halide, (iii) an organoaluminum compound or (iv) a Lewis acid.

4,158,089

CONTACT LENSES OF HIGH WATER CONTENT

Samuel Loshaek, and Chah Moh Shen, both of Chicago, Ill., assignors to Wesley-Jessen Inc., Chicago, Ill.

Filed Dec. 27, 1977, Ser. No. 864,398

Int. Cl.[2] C08F *218/16, 220/12, 226/06;* **G02C** *7/04*

U.S. Cl. 526—264 **8 Claims**

1. A contact lens of about 60% to 95% water content having an oxygen permeability constant of at least about 10 in units of

$$\frac{cm^2\ ml\ O_2 \times 10^{11}}{sec\ ml\ mm\ Hg}$$

a tensile strength of at least about 2 Kg/cm^2, and an elongation at break of at least 40% consisting essentially of the polymerization reaction product of monomers consisting essentially of:

(1) from 70% to 95% by weight of hydrophilic monomers of which at least 90% are selected from N-vinyl pyrrolidones, N-vinyl succinimide, N-vinyl-ε-caprolactam, N-vinyl pyridine, N-vinyl glutarimide, or mixtures thereof,

(2) from 5% to 30% by weight of hydrophobic monomers of which at least 75% by weight are selected from alkyl esters of methacrylic, acrylic acids, or mixtures thereof, and

(3) from 0.01% o 5% by weight, based on total combined weight of monomers 1 and 2, of at least one cross-linking monomer comprising an allylic monomer having more than one polymerizable double bond selected from monoallyl itaconate, diallyl itaconate, triallyl cyanurate,

triallyl isocyanurate, triallyl trimellitate, N,N-diallylmelamine, or other multifunctional allyl monomers formed by the esterification of polybasic acids with allyl alcohol, or mixtures thereof.

4,158,090

EPOXY RESIN COMPOSITIONS (CASE B) CONTAINING CUMENE-MALEIC ANHYDRIDE RESIDUE

Edward T. Sabourin, Allison Park, and Walter P. Barie, Jr., Glenshaw, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 21, 1978, Ser. No. 879,446

Int. Cl.[2] C08G *59/16, 59/18, 59/68*

U.S. Cl. 528—92 **15 Claims**

1. A new composition capable of being cured to a solid resin highly resistant to boiling acetone which comprises:

(a) a 1,2-epoxy resin containing on the average more than one 1,2-epoxy group per molecule;

(b) a residue remaining from the process wherein cumene is reacted with maleic anhydride in the presence of zinc chloride to obtain a reaction product containing dimethylbenzyl succinic anhydride, 5-phenyl-5-methylhexane-1,2,3,4-tetracarboxylic acid dianhydride and addition products of cumene and maleic anhydride containing more than two anhydride groups per molecule and wherein a sufficient amount of said dimethylbenzyl succinic anhydride is removed from said reaction product to give a residue containing a maximum of 25 weight percent dimethylbenzyl succinic anhydride; and

(c) an accelerator.

4,158,091

PROCESS FOR IMPROVING THE STABILITY OF ETHERIFIED ACETAL HOMOPOLYMERS

Pierino Radici, Turate; Sergio Custro, Gorla Maggiore; Mario Ermoni, Gorla Minore, and Paolo Colombo, Saronno, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Jan. 17, 1978, Ser. No. 870,148

Claims priority, application Italy, Jan. 17, 1977, 19353 A/77

Int. Cl.[2] C08G *2/36*

U.S. Cl. 528—231 **16 Claims**

1. A process for eliminating the unstable polyoxymethylene chains of an etherified acetal homopolymer, characterized by heat-treating said homopolymer in the molten state at a temperature of at least 180° C., in the presence of one or more halides of alkali metals and alkaline earth metals, for a period such as to ensure substantially complete degradation of said unstable chains, wherein no more than 5% by weight of water is present.

4,158,092

PROCESS FOR THE MANUFACTURE OF VINYL CHLORIDE POLYMER DISPERSIONS WITH A LOW MONOMER CONTENT

Franz Bötsch, Burgkirchen; Christoph Heinze, Burghausen, and Horst Wolff, Neuötting, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

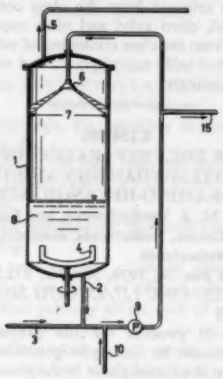
Continuation of Ser. No. 597,456, Jul. 21, 1975, abandoned. This application Oct. 26, 1977, Ser. No. 845,479

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1974, 2435704; Jul. 18, 1975, 2532173

Int. Cl.[2] C08F *6/16*

U.S. Cl. 528—500 **11 Claims**

1. A process for the removal of unreacted monomers from aqueous polymer dispersions being produced in aqueous phase by emulsion or suspension polymerization of polyvinyl chloride and its copolymers and graft copolymers containing up to 30% by weight of comonomers in a vessel comprising the steps of spraying the dispersion at a temperature of 50°–150° C. in droplets having an mean diameter of from 0.05 to 3 mm at an issuing speed in the range of from about 5–250 m/sec. onto a substantially vertical internal wall of the vessel, the distance between the spraying device and the wall of the vessel being in the range of from about 20–400 cm, the pressure in the vessel being maintained from 200 mm Hg below the saturation pressure of water in the dispersion up to 500 mm Hg above such



saturation pressure whereby the release of monomer in gaseous form and retention of most of the water in liquid form are promoted while foaming of the dispersion is minimized, withdrawing gaseous constituents above the spray of the dispersion and collecting the sprayed dispersion in the lower part of the vessel.

4,158,093

PROCESS FOR SUBSTITUTING AND DEQUATERNIZING PYRIDYLETHYL QUATERNARY SALTS OF PYRIDINE AND BYPYRIDINE BASES

Thomas D. Bailey, and Charles K. McGill, both of Indianapolis, Ind., assignors to Reilly Tar & Chemical Corporation, Indianapolis, Ind.

Filed Dec. 15, 1977, Ser. No. 860,787

Int. Cl.[2] C07D *213/06, 213/22, 403/02*

U.S. Cl. 542—455 **81 Claims**

1. A process for dequaternizing a 2-(2-pyridyl)ethyl or 2-(4-pyridyl)ethyl quaternary salt of a pyridine or bipyridine base or its acid salt, comprising the step of reacting the pyridylethyl quaternary salt or its acid salt with a caustic material.

4,158,094

DIHYDROOXADIAZINONES AND METHOD FOR MAKING

George E. Niznik, Lanesboro, Mass., assignor to General Electric Company, Schenectady, N.Y.

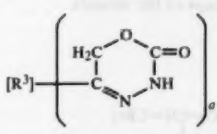
Continuation-in-part of Ser. No. 608,450, Aug. 28, 1975, Pat. No. 4,097,671. This application Jun. 22, 1977, Ser. No. 808,861

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] C07D *273/04*

U.S. Cl. 544—68 **4 Claims**

1. Dihydrooxadiazinones of the formula,



where "a" is an integer equal to 1 or 2, and when "a" is 1, R^3 is a monovalent radical and when "a" is 2, R^3 is a divalent

radical, and R^3 is selected from the class consisting of aryl radicals selected from the class consisting of tolyl, xylyl and naphthyl, halogenated aryl radicals selected from the class consisting of halophenyl, halotolyl, haloxylyl and halonaphthyl, alkoxy aryl radicals selected from the class consisting of alkoxy phenyl, alkoxy tolyl, alkoxy xylyl and alkoxy naphthyl, nitroaryl radicals selected from the class consisting of nitro phenyl, nitro tolyl, nitro xylyl and nitro naphthyl, sulfoaryl radicals selected from the class consisting of sulfo phenyl, sulfo tolyl, sulfo xylyl and sulfo naphthyl, arylene radicals and halogenated arylene radicals.

4,158,095

PROCESS FOR THE PREPARATION OF 5-(4-AMINO BUTYL)-HYDANTOIN AND/OR 2-UREIDO-6-AMINO-HEXANOIC ACID AMIDE

Franciscus H. A. M. J. Vandenbooren, and Egidius J. M. Verheijen, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 26, 1978, Ser. No. 872,951
Int. Cl.[2] C07C *127/15;* C07D *233/76*
U.S. Cl. 548—313 **7 Claims**

1. An improved process for the preparation of 5-(4-aminobutyl)-hydantoin by the hydrogenation of 5-(3-cyanopropyl)-hydantoin in a liquid phase in the presence of a hydrogenation catalyst, hydrogen and ammonia, said improvement consisting essentially of carrying out said hydrogenation in the presence of a hydrogenation catalyst in the form of a solid bed wherein said liquid phase containing 5-(3-cyanopropyl)-hydantoin is passed through said solid bed.

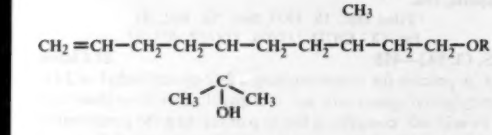
4,158,096

INTERMEDIATES FOR INSECT PHEROMONE

Richard J. Anderson, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Mar. 13, 1978, Ser. No. 886,326
Int. Cl.[2] C07C *33/02, 43/30, 69/16*
U.S. Cl. 560—262 **6 Claims**

1. A compound of the formula:



in which R is hydrogen, acetyl or 2,5-dioxahexyl.

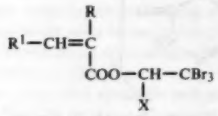
4,158,097

POLYMERIZABLE COMPOUNDS CONTAINING TRIBROMOMETHYL GROUPS

Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 618,629, Oct. 1, 1975, abandoned. This application Mar. 30, 1977, Ser. No. 782,613
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1974, 2449214
Int. Cl.[2] C07C *69/54*
U.S. Cl. 560—223 **2 Claims**

1. In a process for the manufacture of compounds containing tribromomethyl groups of the formula



in which X is chlorine or bromine, R is hydrogen or methyl and R^1 is hydrogen or a group of the formula —COO—CHX—CBr_3 by reacting unsaturated acid halides of the formula

$$R^2—CH=CR—COX$$

in which X is chlorine or bromine, R is hydrogen or methyl and R^2 is hydrogen or —COX, with equivalent amounts of tribromoacetaldehyde without solvents or in a solution of inert aliphatic, cycloaliphatic or aromatic solvents, in the presence of a Lewis acid selected from the group consisting of $AlBr_3$, $Febr_3$ and $FeCl_3$, at a temperature of from 0° to 80° C. with subsequent distillation of the reaction product, the improvement comprising: adding to the reaction mixture from about 0.1 to 10% by weight of magnesium oxide prior to the distillation.

4,158,098

ORGANO LITHIUM INITIATOR

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 372,240, Jun. 21, 1973, Pat. No. 3,931,107. This application Aug. 4, 1975, Ser. No. 601,733
Int. Cl.[2] C07C *41/06*
U.S. Cl. 568—633 **14 Claims**

1. An organolithium initiator prepared by reacting at least one hydrocarbon lithium compound with at least one polyalkoxy monovinyl-substituted aromatic compound in a ratio effective to result in said organolithium initiator, wherein said polyalkoxy monovinyl-substituted aromatic compound is characterized by at least two adjacent alkoxy groups on a benzene ring nucleus.

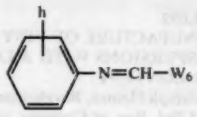
4,158,099

PRODUCTION OF AROMATIC COMPOUNDS CONTAINING ETHYLENE DOUBLE BONDS

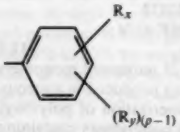
Adolf E. Siegrist, Basel; Peter Liechti, Arisdorf; Hans R. Meyer, Binningen, and Kurt Weber, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 506,663, Sep. 16, 1974, Pat. No. 3,991,049, which is a continuation of Ser. No. 292,229, Sep. 25, 1972, abandoned, which is a continuation of Ser. No. 743,001, Jul. 8, 1968, abandoned. This application Apr. 5, 1976, Ser. No. 673,317
Claims priority, application Switzerland, Jul. 14, 1967, 101110/67
Int. Cl.[2] C07C *41/06*
U.S. Cl. 568—635 **1 Claim**

1. Process for the manufacture of styryl compounds, which comprises reacting (A) a Schiff base formula



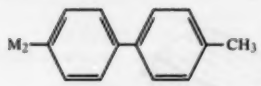
wherein
h represents hydrogen or halogen and,
W_6 represents a phenyl residue



wherein
R_x denotes a phenoxy group or an alkoxy group containing 1 to 4 carbon atoms,

R_y represents an alkoxy group containing 1 to 4 carbon atoms and,

p represents the numbers 1 to 3 with (B) compound of formula



wherein M_2 represents hydrogen, the methyl group or phenyl, with this reaction being carried out at temperatures from 10° to 150° C. In the presence of a basic compound of the formula $KOC_{x-1}H_{2x-1}$ wherein x represents an integer from 1 to 6 and with dimethylformamide as the reaction medium, and wherein in the case, where potassium hydroxide is used as a basic compound, this may have a water content of up to 15%, and wherein the ratio of the Schiff base to the basic potassium compound being 1:1 to 1:8.

4,158,100

PROCESS FOR THE PREPARATION OF β-PHENYLETHYL ALCOHOL VIA HOMOLOGATION

Martin B. Sherwin, Wayne, and Arthur M. Brownstein, Wyckoff, both of N.J., assignors to Chem Systems, Inc., New York, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,209
Int. Cl.[2] C07C *29/00*
U.S. Cl. 568—715 **6 Claims**

1. A process for the preparation of β-phenylethyl alcohol which comprises reacting a feedstock containing benzyl alcohol in the presence of at least 0.1 weight percent water (based on the feedstock) with a mixture of hydrogen and carbon monoxide in the presence of a cobalt catalyst promoted with a ruthenium and an iodide compound at a pressure of at least 70 atmospheres and at a temperature of from 100° to 165° C.

4,158,101

PROCESS FOR THE METHYLATION OF PHENOLIC COMPOUNDS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 15, 1977, Ser. No. 787,891
Int. Cl.[2] C07C *37/12, 39/06*
U.S. Cl. 568—804 **9 Claims**

1. A process for methylating mononuclear phenolic compounds, comprising:

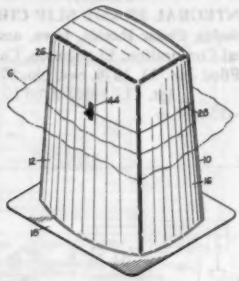
(a) reacting a mononuclear phonolic compound selected from the group consisting of phenol, phenols substituted with one to four primary alkyls each of one to six carbon atoms, phenols substituted with one to four secondary alkyls each of one to six carbon atoms, resorcinol, hydroquinone, catechol, and the methylated and ethylated derivatives of one to three primary or secondary alkyl group substituted resorcinol, hydroquinone and catechol with a methane-containing gas in the presence of a metallic catalyst selected from the group consisting of nickel, cobalt, and mixtures thereof at a temperature in the range of about 300° C. to about 475° C. to produce methylated mononuclear phenolic compounds.

4,158,102

ENCLOSURE FOR EQUIPMENT

William L. Bright, 900 Portway Ave., Hood River, Oreg. 97031

Filed Mar. 27, 1978, Ser. No. 890,375
Int. Cl.[2] E02D *29/10*
U.S. Cl. 174—52 R 8 Claims



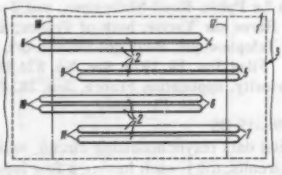
1. An enclosure for equipment comprising
(a) a vertical tubular housing having an inner area defined by surrounding front, rear and side walls,
(b) the lower end of said housing being open for receiving cable extending up from the ground,
(c) the upper end of said housing being open throughout its entire cross sectional area,
(d) a substantially straight wall portion at the upper end of said rear wall arranged to support equipment to be connected to the cable,
(e) said front wall being of less height than said rear wall to provide a front access opeing to the equipment supported on the upper portion of said rear wall,
(f) the walls of said housing being curved outwardly at a progressively smaller radius toward the bottom,
(g) and a cover having a downwardly extending flange and arranged to cover said upper open end including said front wall opening.

4,158,103

ELECTRIC WOVEN SWITCHING MATRIX

Jury I. Danilin, ulitsa Savushkina, 9, kv. 64; Konstantin A. Maringulov, ulitsa Lomonosova, 12, kv. 68; Leonid A. Voronkov, Lesnoi prospekt, 32, kv. 105; Mikhail N. Mokeev, prospekt Schorsa, 64, kv. 31, and Anatoly M. Khripov, ulitsa Tipanova, 29, kv. 1003, all of Leningrad, U.S.S.R.

Filed Apr. 14, 1977, Ser. No. 787,328
Claims priority, application U.S.S.R., Apr. 19, 1976, 2349069[I]
Int. Cl.[2] H05K *1/04*
U.S. Cl. 174—68.5 2 Claims



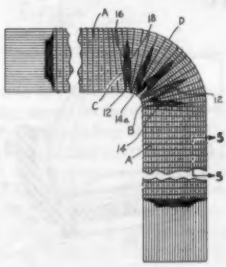
2. An electric woven switching matrix comprising:
an insulating field fabric formed of a plurality of interwoven insulating fibers;
a plurality of conducting wires interwoven with said plurality of insulating fibers of said insulating field fabric;
a plurality of sections for installation of circuit elements over the area of the matrix, each of said sections including:
sets of said plurality of conducting wires which form, by severing, matrix terminals to be electrically connected with lead-outs of a circuit element to be installed in said section,
said sets of conducting wires extending out from said insulating field fabric at points disposed on one side of said section, extending over the surface of said insulating field fabric and extending back into said insulating field fabric at points disposed on an opposite side of said section,
said exit points from said insulating field fabric and said entrance points into said insulating field fabric for odd sets of conducting wires of said sets of conducting wires being staggered with respect to said exit points from said insulating field fabric and said entrance points into said insulating field fabric for even sets of conducting wires of said sets of conducting wires to provide overlapping regions of said even and odd sets of conducting wires which are of substantially greater length than the spacing between adjacent sets of conducting wires.

4,158,104

CURVED WOVEN CABLE AND METHOD

Edgar A. Ross, Greenville, S.C., assignor to Southern Weaving Company, Greenville, S.C.

Filed Jun. 3, 1977, Ser. No. 803,403
Int. Cl.[2] H01B *7/08*
U.S. Cl. 174—117 M 15 Claims



1. A curved woven electrical cable having a generally flat configuration comprising:
a plurality of conductors;
a woven cable portion including a plurality of warp binder strands and a fill strand interwoven with said conductors to bind said conductors together; and
a curved cable portion including at least one void area wherein said conductors are present but are not interwoven with said warp strands and said fill strand leaving said conductors relatively unbound in said void areas.

4,158,105

CLOCK EXTRACTION DEVICE FOR DOUBLE-BINARY PHASE-SHIFT KEYING SYSTEM

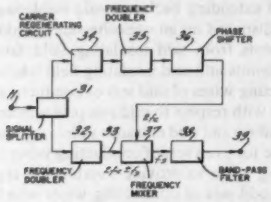
Susumu Otani, and Toshitake Noguchi, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed May 19, 1977, Ser. No. 798,358
Claims priority, application Japan, May 21, 1976, 51-59304
Int. Cl.[2] H04B *1/06*
U.S. Cl. 178—69.1 4 Claims

1. A circuit for extracting a clock signal from a double-binary PSK-modulated carrier wave, comprising:
means supplied with said PSK-modulated carrier wave for regenerating the unmodulated carrier wave component of said PSK-modulated carrier wave;
a first frequency multiplier connected to said regenerating means for doubling the frequency of the said regenerated unmodulated carrier wave component;
a second frequency multiplier supplied with said PSK-

modulated carrier wave for doubling the frequency of said PSK-modulated carrier wave;

means connected to said first and second frequency multipliers for frequency mixing the outputs of said first and second frequency multipliers; and



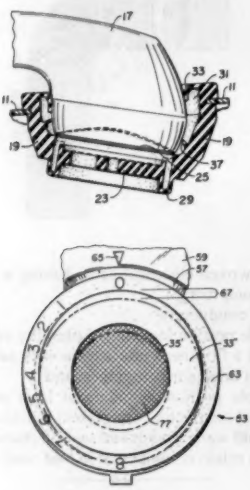
filter means connected to said frequency mixing means for extracting from the output of said frequency mixing means said clock signal.

4,158,106

TELEPHONE HANDSET ACOUSTIC COUPLING CUP

Roy G. Mason, Sunnyvale, Calif., assignor to Anderson Jacobson, Inc., San Jose, Calif.

Filed Dec. 5, 1977, Ser. No. 857,090
Int. Cl.[2] H04M *11/00*
U.S. Cl. 179—2 C **14 Claims**



1. In an acoustic data coupler having a case and two acoustic coupling cups held by said case and spaced apart for accepting receiver and transmitter portions of a telephone handset, one of said cups containing a telephone receiving transducer and the other of said cups a telephone transmitter transducer, at least one of said cups comprising:

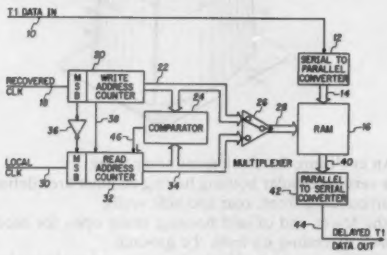
a thin flexible lip extending inward of a more rigid circular support extending upward from the case, said lip terminating in a circular opening having a given diameter, the mechanical characteristics of the lip being such that when a telephone handset receiver or transmitter having a diameter larger than said given diameter is forced inward through the cup opening the internal circular edge of said lip stretches outwardly firmly gripping the handset transmitter or receiver and moves inward therewith from the lip as the receiver or transmitter is urged inward to a rest position, thereby causing a roll in said lip which provides a force tending to pull the telephone handset into said cup and against said telephone transducer, whereby good quality acoustical coupling is provided between the handset receiver or transmitter and the cup transducer.

4,158,107

INTEGRAL FRAME SLIP CIRCUIT

David C. Nicholas, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 23, 1978, Ser. No. 871,654
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 AF **11 Claims**



1. Elastic storage apparatus for connecting data lines together comprising, in combination:

first means for receiving input data including a periodically occurring framing indicator;

second means for outputting data after a variable delay;

elastic store means, connected between said first and said second means, for variably time delaying data from input to output between predetermined limits;

write address means;

read address means;

mutiplex means, connected between said read and said write address means and said elastic store means, for multiplexing read and write addresses to said store means such that data is written into an addressed area in said store means and then other data is read out of an addressed area in said store means before a write operation is repeated; and

means, connected to said multiplex means, for detecting the approach to said predetermined limits of the time delay and for readjusting the addresses and thus the time delay in the store means by a time equivalent to the passage of an amount of data equal to the period of the framing indicator.

4,158,108

DIGITAL DATA RESYNCHRONIZATION DEVICE

Jean-Pierre Le Pabic, Rueil-Malmaison, and Jean-Louis Y. C. Moreau, Bures sur Yvette, both of France, assignors to Le Material Telephonique, Boulogne-Billancourt, France

Filed Jan. 24, 1978, Ser. No. 871,955
Claims priority, application France, Jan. 28, 1977, 77 02415
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 BS **8 Claims**

1. A digital data resynchronizing circuit, which comprises:

n input circuits, $n \geqq 1$, each having a first input terminal for receiving binary data in serial form at the rate of clock signals received at a second input terminal;

a first output terminal for deriving the resynchronized data at the rate of a local clock circuit;

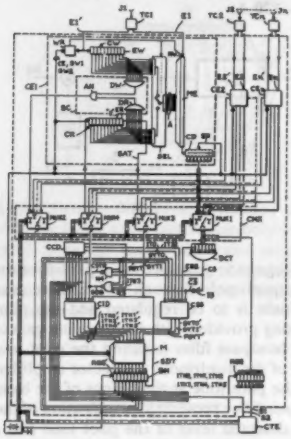
n input memory circuits, the data input and output of each memory circuit being respectively connected to the first input and output terminals of the corresponding input circuit;

n write-address code circuits, each associated with a corre-

sponding input memory circuit and incremented at the rate of said received clock signals; and

n read-address code circuits each associated with a corresponding input memory circuit and incremented at the rate of said local clock, characterized in that

each of said input memory circuits is implemented as a m×1 bit memory, m>1, and said circuit further comprises:



n write circuits for enabling write operations in a corresponding input memory circuit during at least two time slots of the local clock cycle;

n read circuits for controlling the read operations in a corresponding imput memory circuit during anothe time slot of said local clock cycle; and

n code difference circuits for ensuring that the read and write address codes for a corresponding input memory circuit are different.

4,158,109

INTERFERENCE INSENSITIVE LINE SUPERVISION CIRCUIT

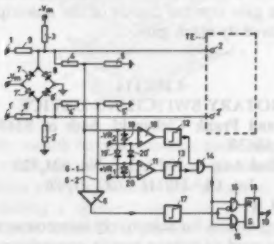
Eise C. Dijkmans, and Einar A. Aagaard, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 12, 1978, Ser. No. 868,806

Claims priority, application Netherlands, Jan. 25, 1977, 7700719

Int. Cl.[2] H04M *3/22;* H04B *3/46*

U.S. Cl. 179—18 FA **3 Claims**



1. A connecting circuit for telephone lines which comprises a line supervision circuit means for providing signals in response to open and closed circuits of said lines, said line supervision circuit means providing undesirable signals in response to overvoltage conditions on said lines, detection means responsive to overvoltage conditions of the telephone line exceeding a working range of the line supervision circuit for producing signals, a line state store responsive to the line supervision circuit means and changing state in response to signals therefrom, blocking means connected to said detection means for preventing the line supervision circuit from affecting the state of the line state store.

4,158,110

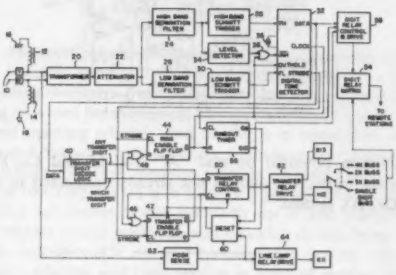
TONE SELECTIVE KEY TELEPHONE INTERCOM SYSTEM INCLUDING DIGITAL TONE DETECTOR

Richard J. Ullakko, Kirkland, and Victor M. De Pinto, Bellevue, both of Wash., assignors to Tone Commander Systems, Inc., Redmond, Wash.

Filed Aug. 25, 1977, Ser. No. 827,630

Int. Cl.[2] H04M *1/72, 1/50*

U.S. Cl. 179—99 R **24 Claims**



1. A tone selective key telephone communication system, comprising: decoder means including digital multi-frequency tone detector means for decoding station address information in the form of frequency coded tone signals transmitted from a calling station and access means operatively associated with said detector means for causing a called station having a station address corresponding to the decoded station address to be accessed in order to produce a call indication thereat, said access means including means for controlling operation of said tone detector means during call indication.

4,158,111

EXCLUSION SYSTEM FOR A KEY TELEPHONE SYSTEM

Bruce R. Saxon, Harrisburg, Pa., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Jan. 13, 1978, Ser. No. 869,392

Int. Cl.[2] H04Q *5/20*

U.S. Cl. 179—99 A **31 Claims**

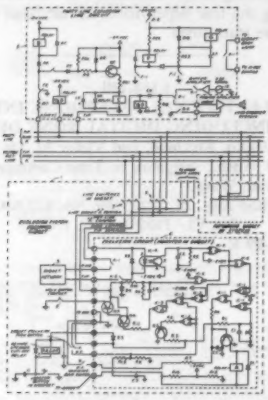
1. An exclusion system for a central office/private branch exchange (CO/PBX) system and a party line paging and intercom system, said CO/PBX system having an "A" lead, a tip conductor and a ring conductor and said party line system having an "A" lead, a tip conductor and a ring conductor comprising:

first means coupled to said "A" lead of said party line system when said party line system is selected and responsive to a predetermined potential on said "A" lead of said party line system to coupled a tip conductor and a ring conductor of an associated subset to said tip and ring conductors of said selected party line system;

wherein said first means is coupled to said 'A' lead of said CO/PBX system when said CO/PEX system is selected and is responsive to a predetermined potential on said 'A' lead of said CO/PBX system to couple to the tip conductor and the ring conductor of said associated subset to said tip and ring conductors of said selected CO/PBX system;

second means coupled to said "A" lead of said party line system to manually generate a first exclusion potential for said party line system to exclude subsets not already connected to said party line system; and

third means coupled to said "A" lead of said CO/PBX system responsive to a given potential on said "A" lead of said CO/PBX system to automatically produce a second



exclusion potential on said "A" lead of said Co/PBX system to exclude subsets not already connected to said CO/PBX system.

4,158,112

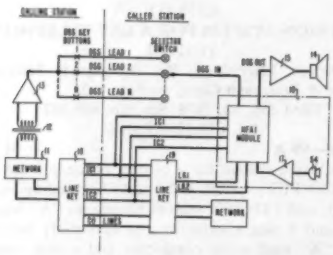
HANDS-FREE ANSWER ARRANGEMENT ON INTERCOM FOR KEY TELEPHONE SYSTEM

Ralph L. Cerbone; Robert A. Lindsay, both of Indianapolis; John M. Noonan, Greenfield, and Martin G. Rudroff, Indianapolis, all of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1978, Ser. No. 900,425

Int. Cl.[2] H04Q *5/20*

U.S. Cl. 179—99 A **13 Claims**



10. In a key telephone system having a plurality of stations and signaling means for initiating telephone intercommunications between the stations, a hands-free answer control circuit is associated with each one of the plurality of stations having hands-free answer capability for establishing telephone intercommunications between the stations and each hands-free answer control circuit is arranged for operation in a multiple intercom line system

characterized in that

the key telephone system comprises:

closed loop means connecting a first one of the stations to a second one of the stations for providing a transmit path and a receive path for an out-of-band signal generated in the hands-free answer control circuit associated with a second one of the stations.

4,158,113

LEVEL REGULATOR GOVERNED BY A PILOT TONE

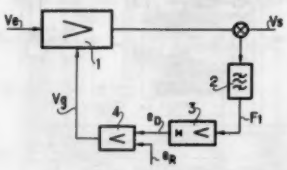
Jean-Claude Lacroix, Longjumeau, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

File Jun. 29, 1978, Ser. No. 920,896

Claims priority, application France, Jul. 21, 1977, 77 22353

Int. Cl.[2] H04B *3/12*

U.S. Cl. 179—170 A **4 Claims**



1. A level regulator governed by a pilot tone comprising a variable gain quadripole through which there passes a signal whose amplitude is to be regulated and the pilot tone, the quadripole being provided with an automatic gain control loop formed by a bandpass filter isolating the pilot tone from the output signal of the quadripole, a detector amplifier measuring the level of the pilot tone at the output of the bandpass filter, and an error amplifier providing an indication of the difference between the detected level of the pilot tone and a reference level, the error amplifier acting on a circuit controlling the gain of the quadripole and comprising an amplification circuit with two differential inputs, one receiving the detected level of the pilot tone and the other receiving the reference level, an output terminal, and two direct current supply terminals, one positive, the other negative, one of which can go to zero potential, and a threshold detector receiving at its input the detected level of the pilot tone and providing a two-state output signal whose state depends on whether the detected level of the pilot tone is greater or less than the threshold, wherein the error amplifier also comprises a two-state bias circuit controlled by the threshold detector and connected into the supply circuit of the amplification circuit in series with the supply terminal whose polarity corresponds to that of the output signal of the amplification circuit when it is normally supplied and receives a zero detected level, said two-state bias curcuit providing, under the control of the threshold detector, the bias for the supply terminal to which it is connected, the bias voltage when the detected level of the pilot tone is greater than the threshold of the threshold detector being the value required by the amplification circuit for normal operation, and the bias voltage when the detected level of the pilot tone is lower than the threshold of the threshold detector being a value closer to that of the bias of the other supply terminal, approximating that required by the gain control circuit of the quadripole for the quadripole to have its mean gain.

4,158,114

ROTARY SWITCHING DEVICE

David Butler, and Frank Cichanski, both of 5243 S. Cicero, Chicago, Ill. 60638

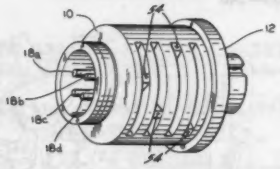
Filed Aug. 4, 1977, Ser. No. 821,723

Int. Cl.[2] H01H *9/00, 21/76*

U.S. Cl. 200—1 R **17 Claims**

1. A switching matrix for selectively interconnecting electrical components, said switching matrix comprising: a housing; coupling means terminating from each end of said housing for conducting electrical signals to and from said electrical components; and a plurality of independently operable multiposition switch assemblies between said coupling means, each of said switch assemblies including a plurality of input terminals and plurality of output terminals, transmission means connecting said terminals for conducting electrical signals between the

switch assemblies and to the coupling means, routing means associated with each switch assembly for conducting electrical signals from a designated input terminal to a selected output terminal, and movable contact means for selectively and individually adjusting each of said switch assemblies to direct the



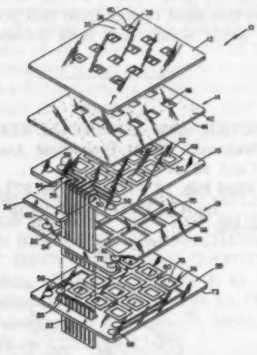
electrical signal between a desired input terminal and a desired output terminal, such that each switch assembly can direct the electrical signal from the designated input terminal to any output terminal to provide a combination of possible pathways for the electrical signal through the matrix depending on the setting of each assembly.

4,158,115

INTERNALLY CONNECTING FLEXIBLE SWITCH

Wayne K. Parkinson, Mequon, and William R. Kissner, Milwaukee, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Jun. 26, 1978, Ser. No. 919,373
Int. Cl.[2] H01H *3/12*
U.S. Cl. 200—5 A **9 Claims**



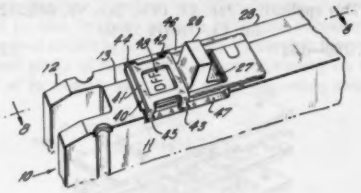
1. A flexible switch having contacts and comprising
a first flexible layer carrying at least one electrical pathway,
a second layer carrying at least one electrical pathway,
means including a spacer layer separating said first and second layers whereby a portion of the first mentioned electrical pathway operates as a movable switching contact, and
normally conductive material inserted within at least one aperture in said spacer layer and in electrical contact with said electrical pathways on both said first and second layers,
thereby providing an internal electrical connection between said first and second layers.

4,158,116

SNAP-ON HANDLE BLOCKING DEVICE

Keith T. Krueger, Bellefontaine, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 25, 1977, Ser. No. 844,621
Int. Cl.[2] H01H *9/28*
U.S. Cl. 200—42 T **7 Claims**



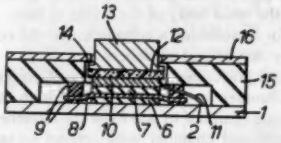
1. An electrical switching unit including a housing, a manually operable contact operating member including a handle extending through a front opening of said housing, said handle being mounted for movement between a first and a second end of said opening wherein said handle is in respective contact open and contact closed positions, a blocking device secured to said housing in a first operative position wherein a main section of said blocking device is in front of a portion of said opening to block movement of said handle to one of said contact open and contact closed positions, said blocking device being selectively repositionable on said housing to a second operative position wherein said main section in front of another portion of said opening to block movement of said handle to the other of said contact open and contact closed portions, said housing at its front being elongated and said handle being movable longitudinally thereof, said blocking device at opposite sides of said main section also including leg means extending rearward of said main section into recesses defined by external surface portions of said housing disposed at opposite sides and outboard of said opening, said portions of said housing defining said recesses being undercut, each of said leg means including spaced legs having inwardly bent portions extending into said undercuts.

4,158,117

PRESSURE SENSITIVE SWITCH

Robert M. Quilliam, Chelmsford; Howitt R. Gallantree, Maldon, and Andrew J. Watt, Grays, all of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Nov. 8, 1977, Ser. No. 849,609
Claims priority, application United Kingdom, Dec. 2, 1976, 50204/76
Int. Cl.[2] H01H *57/00, 1/02;* H02K *1/22;* G08C *1/00*
U.S. Cl. 200—181 **6 Claims**



1. A pressure sensitive switch comprising a poly (vinylidene fluoride) (PVF_2) sheet arranged to be compressed and laterally outwardly distended under a load, contact means conductively connected to each major surface of said sheet for receiving a signal generated by said sheet when compressed and distended by the load, two thick blocks of solid elastomeric material between which is sandwiched said sheet, and means for compressing and laterally outwardly distending both blocks by relative motion toward each other and also in the absence of

tension forces compressing and laterally outwardly distending said sheet sandwiched therebetween to generate said signal.

4,158,118

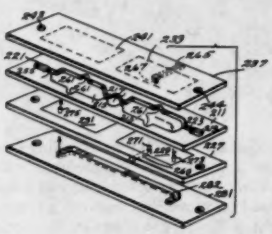
ELECTROSTATIC SWITCH

Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932

Division of Ser. No. 502,224, Aug. 30, 1974, Pat. No. 3,955,059. This application Jan. 12, 1976, Ser. No. 648,572

Int. Cl.[2] H01H *51/00*

U.S. Cl. 200—181 **12 Claims**



1. An electrostatically controlled fluidic switch comprising a dielectric structure having a plurality of chambers formed therein and each of said chambers being joined to at least one other chamber of the group by a constricted region between said pair of chambers, the volume of any said constricted region or regions being substantially smaller than any of said chambers,

a pair of conductive plates positioned on opposite sides of each of said chambers, each such pair of plates substantially sandwiching one and only one chamber, and each pair of plates extending to partially sandwich any said constricted region adjoining the chamber upon whose opposite sides the plates are,

a liquid positioned in one of said chambers and extending somewhat beyond the chamber into but not beyond any adjoining said constricted region when no voltage is applied to the system so that said liquid is also between a portion of the plates associated with any chamber adjoining mutually to the liquid containing chamber through a said constricted region,

at

constricted region, each said constricted region having its own separate said area, which respective area is an area of overlap, being contacted at all points by said liquid extending from its chamber whenever the said liquid is resting in any said chamber adjoining the given said constricted region with no voltage applied to the system, the same said area of overlap being contacted at all points by said liquid no matter which adjoining said chamber contains the main body of the liquid at rest,

means for establishing a voltage across the conductive plates of any one of said chambers,

and means positioned at a plurality of points in said at least one chamber for conducting fluid with respect to said at least one chamber to and from the chamber, the fluid path through said chamber with respect to said means being impeded when and only when the liquid is in said at least one chamber, said liquid being moved into said at least one chamber when a voltage is established across the conductive plates positioned on opposite sides of said at least one chamber providing that the liquid to be moved is resting in an adjoining chamber at the time of establishment of a sufficient voltage, that no voltage is being simultaneously applied across any chamber other than said selected chamber which could interefere with liquid movement, and that said sufficient voltage is held for a sufficient time.

4,158,119

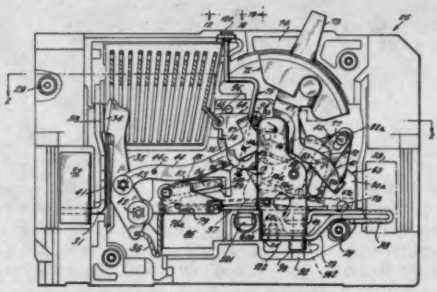
MEANS FOR BREAKING WELDS FORMED BETWEEN CIRCUIT BREAKER CONTACTS

Andrew J. Krakik, Marysville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 20, 1977, Ser. No. 817,358

Int. Cl.[2] H01H *3/54, 1/16*

U.S. Cl. 200—240 **7 Claims**



1. An electrical switching device including separable relatively stationary and movable contacts, an elongated arm having said movable contact at one end thereof, a terminal for connecting said switching device in an electrical circuit, an elongated conducting strap having said terminal and said stationary contact at opposite ends thereof, with said contacts closed said elongated arm and said strap being in closely spaced confronting relationship, first means at the other end of said arm pivotally mounting said arm for pivotally opening and closing the contacts, a contact operating means connected to said arm at a point intermediate the ends thereof, said point being substantially closer to said first means then to said movable contact, said first means being operatively constructed so that a contact opening force generated by said operating means initially rotates the other end of the arm about pivot means defined by engagement between the contacts whereby the portion of said movable contact closest to said point opens before the portion most remote from said point to effectuate breaking of welds which may have formed between said contacts.

4,158,120

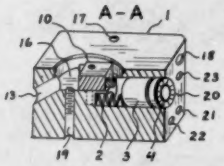
ELECTRIC AND AIR SIGNAL ELEMENT

Eugene J. Pawlowski, 10621 Bloomfield Ave., Unit 32, Los Alamitos, Calif. 90720

Filed Feb. 13, 1978, Ser. No. 877,495

Int. Cl.[2] H01H *3/20, 35/38*

U.S. Cl. 200—330 **3 Claims**



1. A pressure responsive electric switch actuator having a switch housing with a cavity located in the upper surface of said switch housing for the containment of a switch means, and an associated actuating bore, said cavity having a base with upwardly projecting locator pins mounted perpendicularly to said base for locating said switch means, a transparent window closing said cavity allowing observation of said switch means and retaining said switch means and retaining said switch

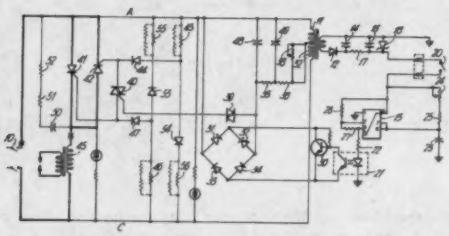
means in position, said actuating bore, being connected to said cavity, having a pressure responsive piston contained therein for actuating said switch means, biased by spring means, said bore having a bottom located below said cavity base and a portion of said bore open to said cavity, said spring means being contained within said bore between said bottom and said piston.

4,158,121

SPOT WELDER CONTROL CIRCUIT

Serge Casagrande, 1031 Homedale Blvd., Windsor, Ontario, Canada

Filed Mar. 13, 1978, Ser. No. 886,108
Int. Cl.² B23K *11/24*
U.S. Cl. 219—114 **1 Claim**



1. In a spot welder having n output transformer with a primary and a secondary winding, a phase-controlled regulating circuit in series with a source of A.C. power and the primary winding, a control voltage source of variable phase connected to the regulating circuit, a timing circuit establishing a desired period of energization of the primary winding and circuit means responsive to the timing circuit to interrupt the connection between the control voltage source and the regulating circuit, said phase-controlled regulating circuit comprising a parallel arrangement of oppositely poled S.C.R.'s, a triac connected between the gates of the S.C.R.'s and a diac coupling the gate of the triac to the control voltage source, the improvement comprising a gating circuit for each S.C.R. comprising a series arrangement of a diode and a resistor connected across the source of A.C. power, the gate of the respective S.C.R. being connected to the junction of the respective diode and resistor via a further steering diode whereby only one half cycle of the input signal appears at each gate and no A.C. signal appears at the gates when the triac is off.

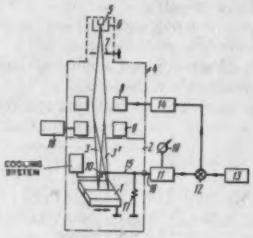
4,158,122

METHOD OF MEASURING AND STABILIZING THE DIAMETER OF HEATING POINT ON WORKPIECE IN ELECTRON BEAM WELDING MACHINE AND ON AUTOMATIC DEVICE FOR REALIZATION THEREOF

Nikolai V. Podola, ulitsa Pushkinskaya, 8, kv. 12; Alexei P. Obolonsky, ulitsa Bereznyakovskaya, 24, kv. 127, and Evgeny L. Tsokol, Rusanovskaya nabereshnaya, 24/51, kv. 77, all of Kiev, U.S.S.R.

Continuation of Ser. No. 427,406, Dec. 21, 1973, abandoned. This application May 9, 1977, Ser. No. 795,295
Int. Cl.² B23K *9/00*
U.S. Cl. 219—121 EB **8 Claims**

1. An automatic device for measuring and stabilizing a heating point in an electron-beam welding machine having an electron-beam gun with a focusing system and two deflection systems for deflecting its electron beam, comprising a generator of sawtooth pulses with two outputs connected in opposite phase to said deflection systems disposed one after the other with a spacing along the path of propagation of the welding electron beam to effect double refraction of the electron beam so that the welding beam is not withdrawn from the welding zone; an electron pickup installed across the path of movement of the beam being deflected to generate electric pulses proportional to the duration of time it receives electrons of said beam and further proportional to the beam diameter; a converter of pulse signals connected to said pickup; a comparison circuit connected at one input to the output of said converter; a setter to preset a reference signal proportional to the beam diameter being stabilized, the output of said setter being connected to the second input of said comparison circuit; the current and voltage rating of said setter being determined from preliminary welding of pilot joints; an amplifier having its output connected to said focusing system and input connected to the comparison circuit to alter focusing by varying the position of the focal plane of the electron beam depending on the error signal at its output; said error signal becoming substantially



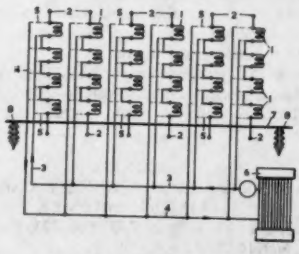
zero when said heating point attains the present diameter, said electron beam being deflected so that the duration of its passage in said pickup is measured, said electron beam remaining present even in an undeflected position for the length of an interval between deflecting pulses at the deflecting systems, said electron beam describing during the diameter measuring cycle any possible path ending at a point on a workpiece corresponding to the position of the undeflected electron beam, said electron beam being deflected during welding and passing through said pickup and returning to the welding zone, focusing accuracy of the electron beam being determined from the duration of the beam passage through the pickup for producing automatic focusing.

4,158,123

SERIES REACTOR

George W. New, Stockton-on-Tees, England, assignor to Tioxide Group Limited, Billingham, England

Filed Feb. 4, 1976, Ser. No. 655,103
Claims priority, application United Kingdom, Feb. 28, 1975, 08571/75
Int. Cl.² B23K *9/00*; H01F *27/08*
U.S. Cl. 219—121 P **8 Claims**



1. In a circuit comprising a multiphase power source connected to an unstable electrical load, the improvement comprising:

a multiphase series reactor connected between said multiphase power source and said unstable electrical load for controlling the power supplied to said unstable electrical load from said multiphase power source, said multiphase

series reactor being connected in series with said multiphase power source and said unstable electrical load, said multiphase series reactor including a number of interconnected coils each of which surrounds a core consisting of a non-magnetically susceptible material, each of said interconnected coils being formed from sub-coils, each sub-coil consisting of a plurality of laterally spaced single plane spirals, each spiral being formed from hollow electrically conducting material, each sub-coil being wound in such a manner that electrical power supplied to the coil passes through the constituent spirals of the sub-coils in the same direction and coolant introduced into the interior of the hollow electrically conducting material forming a sub-coil passes through the spirals of the sub-coil before being withdrawn therefrom;

means for connecting said number of interconnected coils to said multiphase power source;

means for connecting said number of interconnected coils to said unstable electrical load;

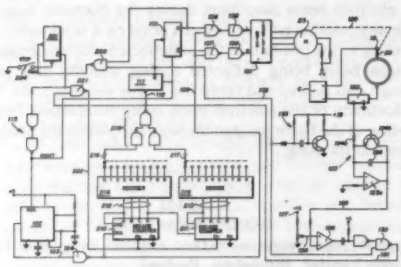
means to introduce coolant through the interior of each sub-coil and to withdraw coolant therefrom.

4,158,124

METHOD AND APPARATUS FOR POSITION AND OSCILLATION CONTROL IN AUTOMATIC ELECTRIC WELDING

Talbert D. Connell, Conroe, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed Nov. 21, 1977, Ser. No. 853,184
Int. Cl.[2] B23K *9/12*
U.S. Cl. 219—125.12 **12 Claims**



1. An apparatus for welding by filling a gap between adjoining work members with weld metal, which includes a gas shielded arc nozzle for melting and depositing metal in said gap, the combination which comprises:

(a) a reversible motor coupled to said nozzle for driving said nozzle laterally across the gap;

(b) means to integrate the current that flows in said arc and to accumulate a physical representation of the magnitude of the resulting integral; and

(c) means to arrest said motor each time said magnitude reaches a predetermined threshold value, and to reverse the direction of travel of said motor.

4,158,125

PORTABLE HOLDER AND HEIGHT ADJUSTER FOR ELECTRIC WARMER

Don Jones, Rte. 47, R.D. 2, P.O. Box 173, Cape May Court House, N.J. 08210

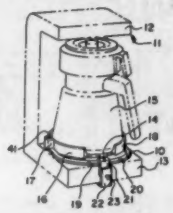
Filed Mar. 24, 1978, Ser. No. 889,645
Int. Cl.[2] F27D *11/02*
U.S. Cl. 219—433 **6 Claims**

1. In a warmer having a liquid holding container on an electrical heating element housed in a base capable of heating a liquid to a temperature dependant upon the amount of liquid in the container, a detachable, portable holder and height adjuster for the liquid container to automatically control heat transfer from the electrical heating element to the liquid in the container, said adjuster comprising:

(a) at least two container holding means to hold and suspend the liquid container at various heights above the warmer heating element,

(b) at least two spring enclosures each housing a compressable spring means,

(c) at least two spring depresser members each having two ends, one end of each rigidly connected to one of the container holder means and the other end bearing against the spring means in such a fashion so as to translate the pressure of the weight of the liquid in the container to compression of the spring means such that the height of



the bottom of the container over the heating element is inversely proportional to the amount of liquid in the container,

(d) at least two support arms resting on the base rigidly connected to the spring enclosures and connected to each other through a pivotal connection on one end to allow the arms to pivot in a horizontal position to cause the container holding means to fit the size of the container, and

(e) bracket means holding and providing compression around the pivotal connection by connected ends of the support arms, maintaining their position with respect to each other, and around the base to hold the entire holder and height adjuster to the base of the warmer.

4,158,126

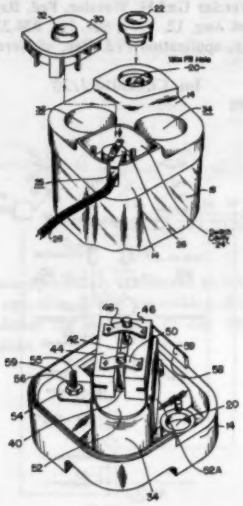
HEATING UNIT FOR DISINFECTING SOFT LENSES, OR THE LIKE

Lamont J. Seitz, 9302 Candlewood Dr., Huntington Beach, Calif. 92646

Filed Sep. 19, 1977, Ser. No. 834,104
Int. Cl.[2] F27D *11/02*
U.S. Cl. 219—439 **5 Claims**

1. An electrically energized heating unit for disinfecting soft lenses, or the like, comprising: a housing; of plastic material a bowl formed of low heat conductive plastic material supported in the housing and providing an air space between the inner wall of the housing and the outer wall of the bowl which air space acts as an insulating means between the bowl and the housing; an incubator formed of low heat conductive plastic material supported on said bowl is sealed relationship therewith, said incubator containing at least one well extending into said bowl; electrically energized heating means mounted in said bowl; electric leads extending into said bowl for supplying electric energy to said heating means; a heat conductive wax contained in said bowl to be heated from a solid state to a liquid state by said heating means for conducting heat uniformly from said heating means to the outer surface of the well of said

incubator so as to introduce heat into said well; and a thermostatic switch connected to said leads and thermally coupled to



the wax in said bowl and having an operating temperature higher than the melting point of the wax in said bowl.

4,158,127

STOVE TOP

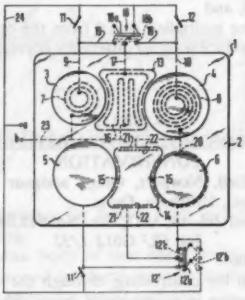
Julius Husslein, Vachendorf, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,266

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653389

Int. Cl.[2] H05B *3/68*

U.S. Cl. 219—446 **6 Claims**



1. In a range top having a plurality of main electrical cooking stations having electrical heating devices and defining discrete cooking areas spaced from one another and being switchable on and off by electrical switching elements individually connectible to the main cooking station through an electrical circuit, an auxiliary electrical cooking station having an electrical heating device and being disposed in vicinity of at least one of said main cooking stations and being conformed to and contiguous with said one main cooking station so as to define therewith a substantially continuous enlarged cooking area, said auxiliary cooking station being switchable on and off with said at least one of said main cooking stations by said electrical switching elements through said electrical circuit.

4,158,128

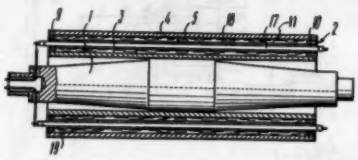
ROLLER FOR APPLYING UNIFORM LOAD ACROSS THE WIDTH OF PROCESSED SHEET MATERIAL

Valery N. Evdokimov; July R. Zeldin, and Vladimir A. Kuznetsov, all of Ivanovo, U.S.S.R., assignors to Ivanovsky Nauchno-Issledo-Valetelsky Experimentalnokonstruktorsky Mashinostroitelny Institut, U.S.S.R.

Filed Jun. 20, 1977, Ser. No. 808,390

Int. Cl.[2] B21B *27/10*; H05B *3/02*

U.S. Cl. 219—469 **12 Claims**



1. A roller for applying a uniform load across the width of a processed sheet material comprising:

an elongate core; and

an elongate shell assembly defining a hollow interior space, said core being disposed within said interior space, said shell assembly comprising an inner pipe fastened at its mid-portion to the mid-portion of said core and an outer pipe coaxially extending over said inner pipe and fastened to the inner pipe at the mid and end portions thereof, said outer pipe being substantially non-bendable under the load supplied by the roll to the processed sheet material.

2. A roller according to claim 1 wherein the outer pipe is formed of a heat-conductive material and the ends of the pipes are hermetically interconnected, forming a closed circular space between the pipes.

3. A roller according to claim 2 further including electric heaters installed within said circular space, said heaters extending along the shell axis.

4,158,129

ELECTRONIC COUNTER

Alfons Baumgartner, Tranreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,206

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656304

Int. Cl.[2] G06M *3/14*

U.S. Cl. 235—92 CA **6 Claims**

1. An electronic incrementing/decrementing counter for evaluating impulses representative of both positive and negative increments generated by digital electronic measuring means comprising:

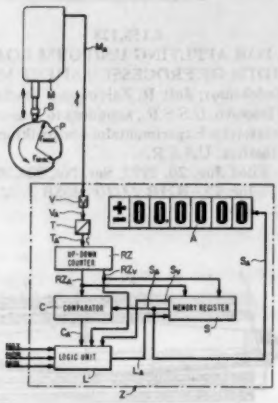
register means for counting the impulses generated by the measuring means and generating a first signed integer position reading;

memory means for storing a second signed integer position reading previously generated by the register means;

comparator means for comparing the first position reading with the second position reading and indicating the result of this comparison at an output; and

control means responsive to the output of the comparator means and the sign of the first and second position readings for loading the first position reading into the memory means when the first position reading is a more extreme

reading than the second position reading, said control means operative both when the sign of the first and second



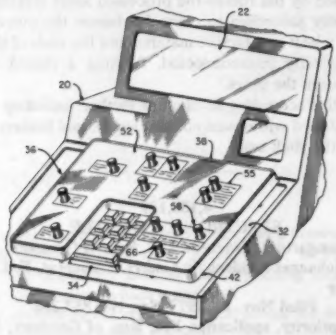
position readings are disparate and when the sign of the first and second readings are equal.

4,158,130

INTERCHANGEABLE AUXILIARY KEYBOARD

Floyd G. Speraw, Cambridge; Michael B. Sestina, Byesville, and Paul L. Hittinger, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 9, 1977, Ser. No. 795,256
Int. Cl.[2] G06C *7/02, 25/00*
U.S. Cl. 235—146 **14 Claims**



1. In combination with a keyboard having key members therein, an auxiliary keyboard assembly adapted for positioning on the keyboard comprising:

(a) a cover member having defined portions for engaging and locating the cover member on the keyboard, said cover member having a plurality of first apertures each positioned over one of the key members;

(b) an indicia bearing member positioned on said cover member, said indicia member having a portion covering certain of said first apertures and further including a plurality of second apertures, each of said second apertures being in alignment with one of the other of said first apertures in said cover member;

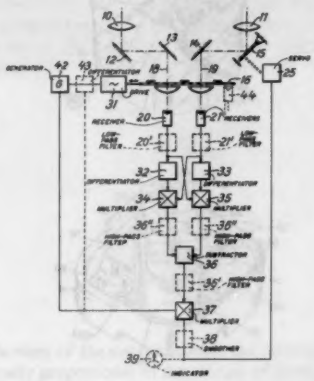
(c) and a removable key actuating means slidably located in each of the aligned first and second apertures and extending through said aligned apertures to engage a corresponding key member for operating said key member upon actuation of said key actuating means.

4,158,131

METHOD AND APPARATUS FOR AUTOMATIC PARALLAX DETERMINATION

Reinhard Probst, Nauborn, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 824,220
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1976, 2637284
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **30 Claims**



1. A method for automatically generating an electrical signal corresponding to parallax in a stereoscopic system, comprising the steps of:

passing at least two imaging light channels through a moving grating structure;

converting said light channels into separate first and second electrical input signals after passage through the grating structure;

differentiating the first input signal to produce a first differentiated signal;

differentiating the second input signal to produce a second differentiated signal;

multiplying the first differentiated signal with the second input signal;

multiplying the second differentiated signal with the first input signal; and

subtracting one multiplied signal from the other multiplied signal to produce a signal difference corresponding to the parallax.

4,158,132

LIGHTING-CONTROL SYSTEM WITH CUE-LEVEL CONFIRMATION

Kenneth A. O'Dell, Newport, Oreg., assignor to Electronics Diversified, Inc., Hillsboro, Oreg.

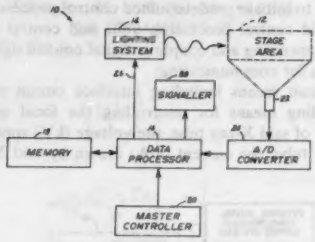
Filed Jul. 14, 1977, Ser. No. 815,584
Int. Cl.[2] G01J *1/32*
U.S. Cl. 250—205 **4 Claims**

1. In a system for controlling, through the use of lighting cues, of illumination in a designated space, where the system includes storage means and means for placing therein cue data related to different lighting cues,

means disposed adjacent said space for monitoring the instantaneous level of illumination therein, and for producing from such monitoring, illumination data directly related to such monitored level,

means operatively interconnecting such storage means and said monitoring means operable, during the storage of cue data related to a particular lighting cue, to store in said storage means the illumination data associated with such cue, and further operable, during functioning of the system to control the illumination in said space, to compare,

for each cue, the stored associated illumination data therefor with the instantaneous illumination data then produced by said monitoring means, and



signaling means operatively connected to said interconnecting means, operable, during the making of such a comparison, to indicate the existence of any difference in the compared data.

4,158,133

FILTERS FOR PHOTO-DETECTORS

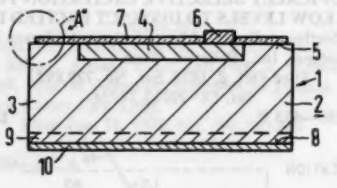
Werner Spaeth, Holzkirchen, and Laszlo Bacs, Neuried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1977, Ser. No. 826,394

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637616

Int. Cl.² H01J *39/12*

U.S. Cl. 250—211 J **13 Claims**



1. A photo-detector for sensing light in a narrow spectral range, comprising:

a semiconductor body of first conductivity type having a region of second conductivity type doped into the semiconductor body at a major surface;

a metal contact connected to said region of second conductivity type;

at least one filtering layer means directly adhering to the major surface of the semiconductor body and covering at least a portion of said region of second conductivity type, said layer means being permeable to a narrow spectral range of electromagnetic radiation and impermeable to adjacent spectral ranges; and

said filtering layer means comprising a Perot-Fabry filter consisting of alternating silicon and silicon-dioxide layers, one of said alternating layers being in direct contact with the major surface.

4,158,134

METHOD AND APPARATUS FOR AUTOMATICALLY RECOGNIZING FAULTS IN THE SURFACE OF THE DIMENSIONS OF AN OBJECT

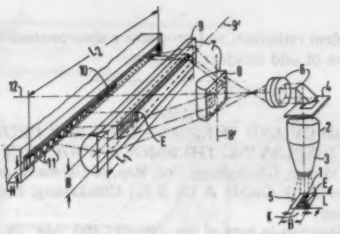
Rolf Martin, Planegg; Norbert Roth, and Ruediger Froese-Peeck, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,850

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1977, 2704983

Int. Cl.² H01J *3/14*

U.S. Cl. 250—216 **5 Claims**



2. An apparatus for automatic measurement of length or position of an object to be measured in a field of view of a measuring device, comprising: a photodiode row; a focusing optics means for projecting at least one length dimension of the object to be measured onto said photodiode row; said focusing optics means having first and second anamorphotic lens means with first and second respective cylinder axes which are orthogonal to one another, said first anamorphotic lens means transferring the field of view of the measuring device to a length of an active surface of said photodiode row and the second anamorphotic lens means contracting a width of the field of view to a width of said active surface of the photodiode row.

4,158,135

ANALYSIS PROCESS

Jan I. Thorell, Beleshögsvägen 1, S-216 18 Malmö 1, Sweden

Filed Aug. 2, 1977, Ser. No. 821,108

Claims priority, application Sweden, Aug. 16, 1976, 7609120

Int. Cl.² G01T *1/161, 1/20*

U.S. Cl. 250—303 **10 Claims**

1. A method of analysis in which a radioactive substance is distributed in a liquid phase and a solid particle phase and radiation from one phase is measured whilst attenuating the radiation from the other phase, wherein the radiation from said other phase is shielded by virtue of the fact that said phase is mixed with and/or contains a radiation-absorbing material in such a quantity and concentration that the dominant portion of the radiation from this phase will be absorbed.

4,158,136

CAMERA SYSTEM EMPLOYING PYROELECTRIC EFFECT

Pierre Felix, and Lucien Guyot, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 5, 1977, Ser. No. 839,635

Claims priority, application France, Oct. 8, 1976, 76 30288

Int. Cl.² H01J *31/49*

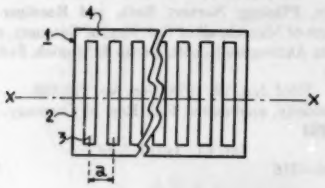
U.S. Cl. 250—330 **15 Claims**

1. A camera system comprising:

a detector of an incident radiation from an object to be viewed, said detector being constituted by a pyroelectric material on which the incident radiation produces a spatial distribution of electric potential representing it;

means for scanning said potential distribution;

a partly transparent grid which moves between said object and said detector, along an axis perpendicular to said



incident radiation, and produces a time continuous modulation of said incident radiation.

4,158,137

METHOD OF AND THERMOGRAPH FOR PRODUCING AND DISPLAYING THERMOGRAPHIC PICTURES

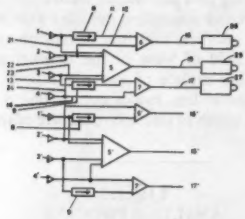
Josef F. Menke, Glücksburg, Fed. Rep. of Germany, assignor to Elektro-Optik GmbH & Co K.G., Glücksburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 681,400, Apr. 29, 1976, abandoned. This application May 15, 1978, Ser. No. 905,900

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1975, 2518937; Jul. 19, 1975, 2532326

Int. Cl.[2] H01J *31/49*

U.S. Cl. 250—332 **10 Claims**



1. A method of producing and displaying thermographic pictures, which includes in combination therewith the step of simultaneously superimposing a plurality of rasters of different fineness relative to each other over the entire width and scope of the picture.

4,158,138

MICROPROCESSOR CONTROLLED X-RAY GENERATOR

Melbourne J. Hellstrom, Severna Park, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Filed Oct. 25, 1977, Ser. No. 845,138

Int. Cl.[2] H05G *1/46*

U.S. Cl. 250—402 **15 Claims**

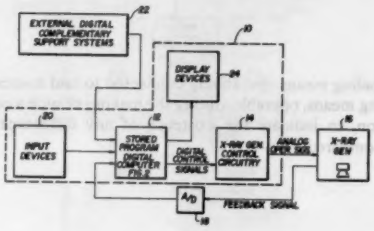
1. A control system for diagnostic radiological apparatus, comprising, in combination:

diagnostic radiological apparatus including a generator and control circuitry therefor operable in response to analog control signals applied thereto for producing radiological images according to a selected diagnostic procedure and including circuit means adapted to initiate processing operations of a stored program digital computer and to respond to said processing operations, said generator including at least one X-ray tube having a controllable focal spot and anode speed;

a stored program digital computer including an interconnected central processing unit, memory and means for communicating with said radiological apparatus via said circuit means;

a plurality of selectable instruction programs stored in said memory, each of said programs being adapted upon command to initiate predetermined control processing actions by said central processing unit, said central processing unit generating and coupling digital control signals to said means for communicating;

said circuit means including interface circuit means, and including means for controlling the focal spot, anode speed of said X-ray tube, the voltage (kV) applied to said X-ray tube, the current (mA) drawn by said X-ray tube,



and the exposure time (s) of at least one X-ray exposure by said X-ray tube and being responsive to said digital control signals to generate said analog control signals applied to said control circuitry and to be responsive to selected analog feedback signals from said radiological apparatus to generate digital signals coupled back to said stored program digital computer; and wherein

said memory is programmed with binary information corresponding to tube rating chart curves for a plurality of focal spot sizes and anode speeds of said X-ray tube, and

said circuit means includes means for supplying diagnostic procedural data including means for selecting technique factors comprising a combination of kV, mA and time.

4,158,139

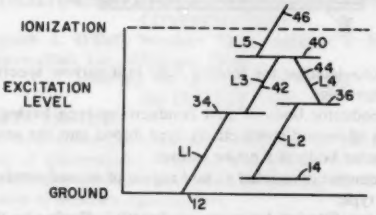
ISOTOPICALLY SELECTIVE EXCITATION FROM PLURAL LOW LEVELS TO DISTINCT EXCITED LEVELS

Peter S. Rostler, Arlington, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Oct. 6, 1976, Ser. No. 729,892

Int. Cl.[2] H01J *39/34*

U.S. Cl. 250—423 P **13 Claims**



1. A method of isotopically selective excitation of particles populating plural low-lying energy levels in plural isotope types, said method comprising the steps of:

selectively exciting particles of a predetermined isotope type from a first low-lying energy level to a first level;

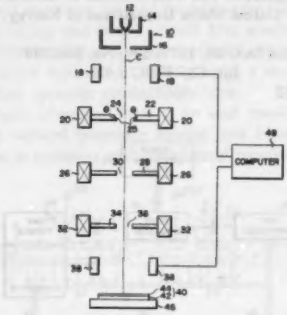
selectively exciting particles of said predetermined isotope type from a second, low-lying energy state to a second, distinct excited level.

4,158,140

ELECTRON BEAM EXPOSURE APPARATUS

Mamoru Nakasuji, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jun. 15, 1978, Ser. No. 915,868
Int. Cl.[2] A61K *27/02*
U.S. Cl. 250—492 A 7 Claims



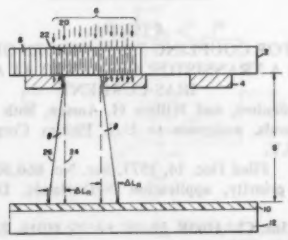
1. An electron beam exposure apparatus comprising:
an electron gun to produce an electron beam;
a mask plate having an aperture which passes said electron beam and forms a bundle of electron beam components with a sectional shape corresponding to the shape of said aperture, said aperture including a tapered plane across the thickness of said mask plate, said tapered plane facing the incidence side of said electron beam; and
a means for converging said bundle of electron beam components and applying said bundle to a workpiece.

4,158,141

PROCESS FOR CHANNELING ION BEAMS

Robert L. Seliger, Agoura, Calif., and Paul A. Sullivan, Stuttgart, Fed. Rep. of Germany, assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 21, 1978, Ser. No. 917,610
Int. Cl.[2] A61K *27/02*
U.S. Cl. 250—492 A 9 Claims



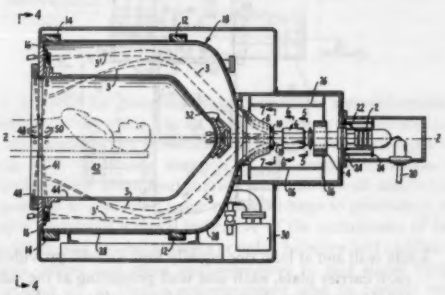
1. A process for interrupting an ion beam while minimizing the lateral deflection thereof which comprises passing a collimated ion beam through selected areas of a thin monocrystalline membrane, whereby atomic lattice resistance to ion transmission is minimized.

4,158,142

METHOD AND APPARATUS INCORPORATING NO MOVING PARTS, FOR PRODUCING AND SELECTIVELY DIRECTING X-RAYS TO DIFFERENT POINTS ON AN OBJECT

Jacob Haimson, Mountain View, Calif., assignor to Haimson Research Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 778,615, Mar. 17, 1977, Pat. No. 4,130,759, and Ser. No. 874,031, Jan. 31, 1978, abandoned. This application Feb. 28, 1978, Ser. No. 882,252
Int. Cl.[2] H01J *35/00*
U.S. Cl. 250—445 T 33 Claims



1. Apparatus for producing x-rays of sufficient intensity for full body tomography and directing such x-rays toward an object of interest from any of a plurality of preselected points spaced from that object and spaced radially about a line extending through that object, said apparatus having no moving parts and comprising
an evacuated housing having a predetermined longitudinal axis;
means positioned within and adjacent one end of said housing and along said axis for producing an electron beam generally along said axis;
stationary target means positioned within and adjacent the opposite end of said housing, said target means encompassing said preselected points and comprising at least a sector of a generally annular structure spaced from said object of interest in a generally radial direction for receiving said electron beam and producing x-rays therefrom and directing said x-rays toward said object of interest;
means positioned along said axis for directing said electron beam selectively to said preselected points on said target means; and
x-ray shielded beam collector means positioned generally adjacent said target means and extending substantially around said line through said object of interest for receiving said electron beam whenever said electron beam is not directed to said target.

4,158,143

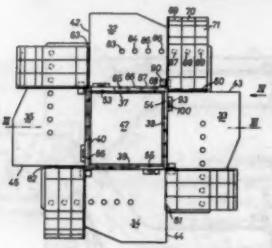
TUBE FOR IRRADIATION EQUIPMENT

Klaus Göhrich, Klüssberg, Fed. Rep. of Germany, and Heinz Vogt, Oberehrendingen, Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 7, 1978, Ser. No. 894,509
Int. Cl.[2] G02B *5/00;* G21K *1/00;* H01J *1/52, 3/00*
U.S. Cl. 250—505 8 Claims

1. A tube for irradiation equipment for limiting an emergent beam comprising:
a baseplate having a central aperture and adapted to be attached to the irradiation equipment;
four carrier plates located parallel to the baseplate, each carrier plate having a beam limiting edge and a sliding edge located at right angles thereto, the limiting edge of each carrier plate resting against the sliding edge of the

adjacent carrier plate and means for displacing each of the two mutually opposite pairs of carrier plates parallel to the direction of its sliding edges and symmetrically to the center of a transmission aperture defined by the limiting edges, so as to continuously vary the transmission aperture and so that during which displacement each of the displaced carrier plates carries with it the carrier plate resting against the limiting edge of the displaced carrier plate parallel to the direction of the limiting edge of the resting carrier plate;



a side wall and at least one equally high lamella provided on each carrier plate, each side wall projecting at the side of the limiting edge abutting the sliding edge at right angles from the respective carrier plate, each lamella being pivotably fastened in the region of the limiting edge and capable of being laid down on the respective carrier plate or of being erected as an extension of the side wall in order to form a side wall of a tube of variable cross-section, each of the carrier plates, side walls, and lamella being opaque to said radiation.

4,158,144

CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF ELECTRICAL SUPPLY POWER

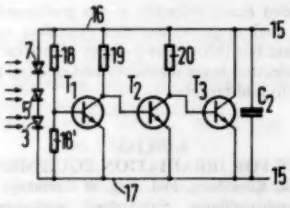
Gerhard Krause, Rosenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 774,661, Mar. 4, 1977, Pat. No. 4,106,423. This application Sep. 14, 1977, Ser. No. 833,045

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641912

Int. Cl.[2] **G02B** *27/00*

U.S. Cl. 250—551 **4 Claims**



1. A circuit arrangement for the transmission of electrical supply power from a mains to a low power electronic device to be energized, comprising: a primary side of the arrangement connected to the mains; a secondary side of the arrangement connected to the electronic device, said secondary side being electrically isolated from the primary side; at least one opto-electronic coupler coupling the primary and secondary sides, a receiver of the opto-electronic coupler operating as a photo-electric cell means for supplying electrical power to the secondary side; and in the secondary side a shunt regulator means being provided for stabilization of output voltage.

4,158,145

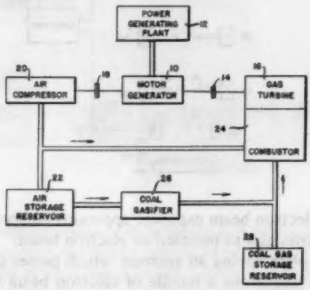
COMBINED COMPRESSED AIR STORAGE-LOW BTU COAL GASIFICATION POWER PLANT

George T. Kartsounes, and Norman F. Sather, both of Naperville, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 20, 1977, Ser. No. 844,084

Int. Cl.[2] **F02C** *3/00*

U.S. Cl. 290—52 **9 Claims**



1. In combination with a base power generating plant **32**, a compressed air energy storage/coal gasification system comprising:

a motor/generator **30** coupled to the power generating plant **32** for operation as a motor in slack demand periods and as a generator in peak demand periods,

an air compressor **40** disconnectably coupled to the motor/-generator **30** for operation by the motor/generator in slack demand periods.

a high pressure gas turbine **36** disconnectably coupled to the motor/generator **30** to operate the motor/generator **30** in peak demand periods,

an air storage reservoir **48** connected to the outlet of the air compressor **40**,

a coal gasifier **58** connected to the outlet of the air compressor **40** and to the air storage reservoir **48**,

a coal gas storage reservoir **72** connected to the outlet of the coal gasifier **58**, and

a combustor **50** connected to the outlets of the coal gasifier **58** and the air compressor **40** and to the coal gas storage reservoir **72** and air storage reservoir **48**, said combustor producing a high pressure gas stream for use in gas turbine **36**.

4,158,146

DEVICE FOR COUPLING TRANSISTORS OPERATED IN I^2L TO A TRANSISTOR OPERATED AT A HIGHER BIAS-CURRENT

Wouter Smeulers, and Willem H. Amsen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,301

Claims priority, application Netherlands, Dec. 31, 1976, 7614610

Int. Cl.[2] **H03K** *19/08, 19/20;* **H01L** *27/00*

U.S. Cl. 307—213 **2 Claims**

1. A coupling device within a semiconductor body having a region containing transistors operating in accordance with I^2L technology including a driver transistor, said driver transistor being coupled to a transistor operated at a higher bias current, said coupling device comprising:

an island of a first conductivity type on said semiconductor body;

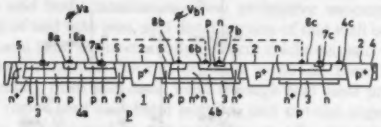
said island being electrically isolated from the rest of said semiconductor body;

said island being connected to a fixed potential;

said semiconductor body having a plurality of zones of a second conductivity type opposed to said first conductivity type;

a lateral transistor formed on said semiconductor body, its base being said island of said first conductivity type, its collector being a first zone of said second opposite conductivity type and its emitter being a second zone of said second opposite conductivity type;

a vertical transistor formed on said semiconductor body, said vertical transistor having said island and said first zone in common with said lateral transistor,



said vertical transistor having said island as its collector; said first zone as its base and a third zone within said first zone of said first conductivity type as its emitter;

said first zone common to said lateral transistor and said vertical transistor being connected to said driver transistor;

said third zone, being the emitter of said vertical transistor and being connected to said transistor operated at a higher bias current;

said second zone of said lateral transistor, being its emitter, which zone is not common to said vertical transistor, and being connected to a voltage supply such that the current from said second zone is larger than the current with which said I^2L transistors are operated.

4,158,147

UNIDIRECTIONAL SIGNAL PATHS

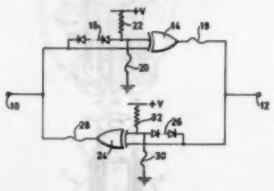
Colin R. Edwards, Mangotsfield, England, assignor to National Research Development Corporation, London, England

Filed Jul. 22, 1977, Ser. No. 818,222

Claims priority, application United Kingdom, Aug. 3, 1976, 32196/76

Int. Cl.² H03K *19/32, 19/08;* **G11C** *17/00*

U.S. Cl. 307—216 **5 Claims**



1. A circuit element comprising first and second unidirectional signal paths connected between two signal connection points so as to pass signals in respective opposite directions therebetween, a respective fusible link in series with each signal path and programming means operative to selectively fuse one or the other of the fusible links thereby to select the direction which signals are to be passed by the circuit element.

4,158,148

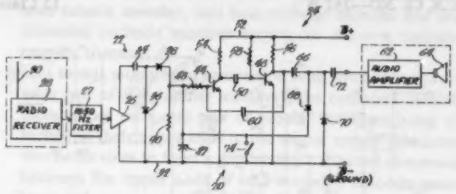
LATCHING DETECTOR CIRCUIT

Howard S. Teller, Jr., 3810 Rose St., Shiller Park, Ill. 60176

Filed Nov. 17, 1977, Ser. No. 852,248

Int. Cl.² G08B *23/00, 29/00;* **H03K** *1/10, 17/28*

U.S. Cl. 307—233 R **8 Claims**



1. A circuit for detecting the occurrence of a predetermined condition, comprising circuit means responsive to occurrence of the condition for generating a voltage which changes in value with increasing duration of the condition; oscillator means coupled at an input thereto with said circuit means and responsive to a selected value of said voltage to generate at an output therefrom a signal indicative of the occurrence of the condition; and feedback means coupled between said oscillator means output and input and responsive to said signal being generated for at least a predetermined time to control said oscillator means to maintain said signal at said output therefrom irrespective of the presence or absence of the condition.

4,158,149

ELECTRONIC SWITCHING CIRCUIT USING JUNCTION TYPE FIELD-EFFECT TRANSISTOR

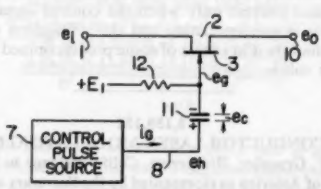
Kiyoshi Otofuji, Kodaira, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Japan

Filed Nov. 8, 1977, Ser. No. 849,646

Claims priority, application Japan, May 16, 1977, 52-55353

Int. Cl.² H03K *17/60, 17/02*

U.S. Cl. 307—251 **5 Claims**



1. An electronic switching circuit comprising:

a junction type field-effect transistor as a switching element having a first electrode for receiving an input signal, a second electrode for delivering an output signal and a gate electrode; and

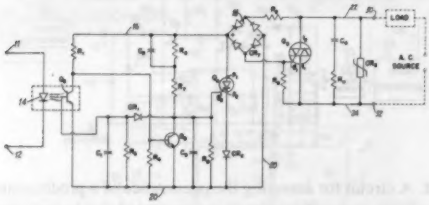
a capacitor connected to form the only connection path between the gate electrode of said transistor and a control pulse source which generates control pulses, said capacitor being cooperative with a rectifying action of the gate electrode of said transistor to supply to the gate electrode of said transistor a switching voltage which is different from the potential level of said control pulse and is DC-restored following said input signal.

4,158,150

SOLID STATE RELAY WITH ZERO CROSSOVER FEATURE

Thomas R. Dever, Princeton, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jan. 10, 1978, Ser. No. 869,073
Int. Cl.[2] H03K *17/72*
U.S. Cl. 307—252 B **12 Claims**



1. A control circuit for a solid state relay comprising
first and second power conductors for energizing said control circuit,
control signal transistor means having collector and emitter electrodes connected between said power conductors, greater
said transistor means having control means that includes a base electrode and being operable in response to a control signal being applied to the control means,
means for coupling a control signal to said control means of the transistor means, wherein
a unidirectional conduction device having main terminals connected between said power conductors and having a gate electrode for controlling current conduction therethrough,
zero crossover detector means comprising a transistor having a base electrode and having collector and emitter electrodes coupled between the power conductors,
the base electrode of the crossover detector means being coupled to the collector of the control signal transistor means,
means for providing a unidirectional conduction path between the base of the control signal transistor means and the collector of the said crossover detector means, and
means for coupling the collector electrode of the crossover detector means to the gate electrode of the said unidirectional conduction device.
said crossover detector means being capable of turning on to conduct current only when the control signal transistor means is nonconducting and the voltage on said power conductors is in excess of some predetermined zero crossover value.

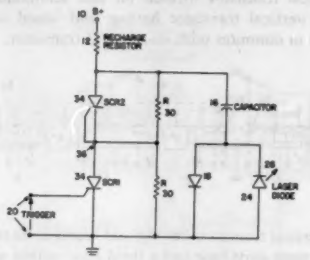
4,158,151

SEMICONDUCTOR LASER MODULATING CIRCUIT

Donald F. Grundler, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1977, Ser. No. 812,300
Int. Cl.[2] H03K *17/00*
U.S. Cl. 307—312 **5 Claims**

1. A modulator for pulsing a semiconductor laser comprising:
first and second SCR's, each having an anode, a cathode and a gate with said anode of said first SCR connected to said cathode and to said gate of said second SCR;
means for equalizing the potential difference across said first and second SCRs connected thereto;
a capacitor connected to said anode of said second SCR:
a diode having an anode and a cathode, said cathode of said diode connected to said cathode of said first SCR, and said anode of said diode connected to said capacitor to complete the charging circuit therefor so that said capacitor becomes charged when said first and second SCRs are in a nonconducting condition;
a laser diode having an anode and a cathode, said cathode of said laser diode connected to said capacitor and said anode of said laser diode connected to said cathode of said first SCR so that said capacitor discharges through said laser diode when said first and second SCRs are in a conducting condition;
a current control circuit comprising:
a transistor having an emitter, a collector, and a base with said emitter connected to said anode of said second SCR, and
a resistor connected to said collector;



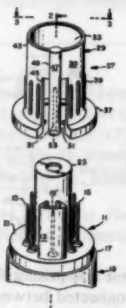
means for applying pulses to said base of said transistor to put said transistor in a non-conducting condition when said first SCR is triggered and while said first and second SCRs are in a conducting condition and to put said transistor in a conducting condition after the discharge current from said capacitor drops below the holding current of said first and second SCRs;
means for applying a potential difference across said resistor in said current control circuit and said cathode of said first SCR; and
means for supplying trigger signals across said gate and said cathode of said first SCR to cause said first SCR to conduct, causing the potential difference across said anode and said cathode of said second SCR to increase rapidly, whereby said second SCR is caused to conduct.

4,158,152

CRT BASE AND PIN PROTECTIVE MEANS

Peter G. Puhak, and Paul C. Shaffer, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 24, 1978, Ser. No. 909,131
Int. Cl.[2] H01J *29/00;* **H01R** *33/74*
U.S. Cl. 313—325 **4 Claims**



1. Protective means for a cathode ray tube-base assembly wherein a substantially annular array of tube connector pins exteriorly protrude through a plurality of aligned apertures

surrounding a central crown portion in the base member whereof at least one pin is isolated by traversing a base aperture ecompassed by a spatially related tubular isolation structure integrally formed as part of said base member and having a length exceeding that of the isolated pin positioned therein, said protective means being in the form of a cap comprising:

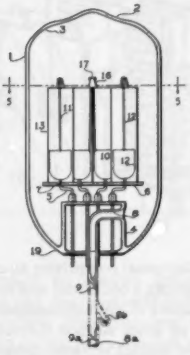
a hollow cylindrical body member evidencing a wall with proximal and distal open ends defining a central cavity therein and having a longitudinal axis therethrough, said proximal end being formed as a terminal rim-like basal portion fashioned to seat on said tube base, said basal portion having an orderly arrangement of apertures therein aligned to mate with the array of said tube pins, said body member wall having sufficient thickness in said proximal region to have formed therein a plurality of longitudinal bores extending inwardly from said apertures into said body member to effect protective encompassment of said tube pins, said distal portion of said wall being a closed band of substantially uniform thickness, said wall having a defined cut-out segment removed therefrom extending from said distal band through said basal proximal region and said basal portion, said cut-out segment being dimensioned to substantially straddle the tubular isolation structure of said tube base; a longitudinal projecting element integrally attached to the distal portion of said wall and extending therefrom spatially through said cut-out area toward said basal portion in a plane parallel to said axis in a manner to spatially ingress into said tubular isolation structure, said projecting element having a longitudinal bore with an opening therein aligned with and dimensioned to accommodate said isolated base pin; and a plurality of substantially resilient cap retaining members fixedly and spatially oriented peripherally within said body member in a manner to frictionally engage the crown portion of said base.

4,158,153

LOW VOLTAGE FLUORESCENT LAMP HAVING A PLURALITY OF CATHODE MEANS

Edwin E. Eckberg, 5504 Currier Cir., Boise, Id. 83705

Filed Jan. 23, 1978, Ser. No. 871,605
Int. Cl.[2] H01J *61/067, 61/42, 61/54*
U.S. Cl. 313—491 **5 Claims**



1. A fluorescent lamp comprising

an envelope having a fluorescent coating on the inner surface thereof and sealed at one end by a re-entrant stem member;

a plurality of lead wires extending through said re-entrant stem member;

platform means mounted on said lead wires;

reflector means substantially centrally mounted on said platform means;

a plurality of pairs of tubular members mounted on said platform means and surrounding said reflector means;

cathode means mounted within each of said tubular members, each said cathode means comprising a base cathode member and an extended cathode member extending from said base cathode member to the upper end of its associated tubular member, said base cathode member and said extended cathode member having an electron emissive coating therein;

spacer means mounted in association with the upper ends of each pair of said tubular members, the extended cathode members of each said pair of tubular members being attached at their upper ends to the spacer means associated therewith so as to form a gap having a selected dimension between the upper ends of said extended cathode members; and

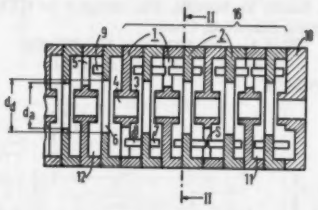
said cathode means being capable of energization by a voltage source via said lead wires.

4,158,154

DELAY LINE FOR TRANSIT TIME AMPLIFIER TUBES

Franz Gross, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1977, Ser. No. 840,495
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 7638147[U]
Int. Cl.[2] H01J *25/34*
U.S. Cl. 315—3.5 **3 Claims**



1. A transit time tube in which a delay line is provided having a filter characteristic with a negative dispersion in the fundamental wave of the longest wave pass band, which form the operating band, the line being formed from a waveguide assembly provided with consecutive cells formed by transverse walls each possessing an electron beam aperture and a coupling slot, and an attenuation path which is provided with dissipative material and in the region of which at least one of the line dimensions which determine the two cut-off frequencies of the pass bands is increased in such manner that in the attenuation path at least one of the two cut-off frequencies of the operating band possesses at least the same distance from the band centre as in the remainder of the delay line, the operating band being determined by the dimensions of the coupling slots while the electric fields of the line wave are attenuated in the attenuation path, the coupling slots being reduced in size in the region of the attenuation path in such manner that the upper cut-off frequency of the operating band is at least equal to that in the remainder of the delay line.

4,158,155
IGNITION CIRCUIT FOR EXTINGUISHING TUBES IN ELECTRONIC FLASH EQUIPMENT

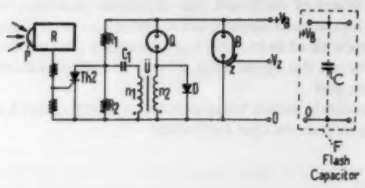
Alfred Hauenstein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1977, Ser. No. 802,368

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625845

Int. Cl.[2] H05B *41/32*

U.S. Cl. 315—151 **4 Claims**



1. An ignition circuit for extinguishing tubes in electronic flash apparatus, comprising:
- an automatic control means for detecting the luminance duration of the flash apparatus;
- an extinguishing tube means used for discharging a flash capacitor of the flash apparatus;
- an ignition transformer having primary and secondary windings;
- a parallel circuit formed of the secondary winding and a diode, said parallel circuit being connected in series with said extinguishing tube means; and
- a series circuit comprising a capacitor and controllable circuit element being arranged in the primary winding, said controllable circuit element being controlled by said automatic control means.

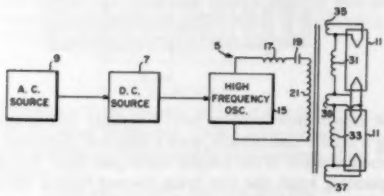
4,158,156
ELECTRON BALLAST APPARATUS FOR GASEOUS DISCHARGE LAMPS

William C. Knoll, Turbotville, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,401

Int. Cl.[2] H05B *41/16, 41/24*

U.S. Cl. 315—278 **7 Claims**



1. Electronic ballast apparatus for operating a pair of gaseous discharge lamps comprising:
- a high frequency inverter means coupled by a rectifier means to an AC potential source; and
- transformer means coupling said high frequency inverter means to said pair of gaseous discharge lamps, said transformer means including:
- an "E"-shaped core member having center and first and second outside leg members;
- a primary winding wrapped about said center leg member and coupled to said high frequency inverter means;
- a first secondary winding wrapped about said first outside leg member and coupled to one of said pair of gaseous discharge lamps; and
- a second secondary winding wrapped about said second outside leg member and coupled to the other one of said gaseous discharge lamps and to said first secondary winding whereby flux is differentially divided between said first and second secondary windings in inverse proportion to the ignition of said first and second gaseous discharge lamps.

4. A process for fabricating electronic ballast apparatus comprising the steps of:
- coupling a high frequency inverter means to an AC potential source by means of a DC rectifier means; and
- coupling said high frequency inverter means to a pair of gaseous discharge lamps by means of a transformer means, said coupling of said transformer means including the steps of:
- selecting an "E"-shaped core member having a center leg and first and second outer leg members;
- wrapping a primary winding on said center leg member and coupling said primary winding to said high frequency inverter means;
- wrapping a first secondary winding on one of said first and second outer leg members and coupling said first secondary winding to one of said pair of gaseous discharge lamps; and
- wrapping a second secondary winding on the other one of said first and second outer leg members and coupling said second secondary winding to the other one of said pair of gaseous discharge lamps and to said first secondary winding whereby flux developed by said primary winding is differentially distributed to said first and second secondary windings in inverse relationship to the ignition of said pair of gaseous discharge lamps.

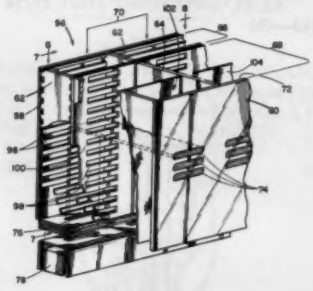
4,158,157
ELECTRON BEAM CATHODOLUMINESCENT PANEL DISPLAY

James W. Schwartz, Deerfield, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 26, 1976, Ser. No. 735,465

Int. Cl.[2] H01J *29/70, 29/72*

U.S. Cl. 315—366 **9 Claims**



1. An image display panel comprising an evacuated, self-supporting envelope having a back wall and having an anode and faceplate with a pattern of cathodoluminescent phosphor targets deposited on an inner surface thereof, said panel being partitioned into two distinct sections comprising:
- a high-voltage front section comprising said anode and said faceplate for receiving a relatively high voltage; that is, a voltage in the kilovolts range; and
- a low-voltage rear section located contiguous to said back wall and electrically isolated from said faceplate by electron-transmissive mesh means, said low-voltage section comprising:
- electron source means disposed along a row-wise edge of said panel for emitting a supply of electrons;
- sequential beam-shaping and -modulating grid means adja-

cent to said electron source means for directing said electrons into a side-by-side, column-wise series of vertically propagating electron beams and for modulating said beams, said means comprising accelerating means comprising at least one grid for accelerating in a straight-line path said electrons in each of said beams to draw from said source means a desired electron density; decelerating means comprising at least one grid for decelerating along said straight-line path said electrons comprising said beams for reducing their energy to cause said beams to be responsive to relatively low beam-control voltages; and modulating grid means for modulating said beams with discrete time-varying signals;

beam guide-isolator means for each of said beams adjacent to but apart from said electron source means and grid means for directing said electrons in the form of relatively low-energy electron beams, that is, beams having an energy of not more than a few hundred electron volts, said beam guide-isolator means directing the beams perpendicularly to said edge and parallel to said faceplate, and isolating said beams from an attractive high-gradient field of said anode;

electron-transmission screen means disposed between said beam guide-isolator and said anode for further isolating said beam within said beam guide-isolator from an attractive high-gradient field of said anode, and for providing an initial, mild acceleration to said beam; and

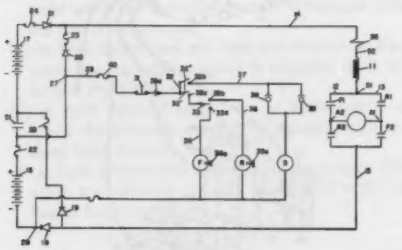
beam-diverting means responsive to the application of relatively low applied beam-diverting voltages for sharply diverting said beams from a selected precise position opposite said faceplate, said beams being diverted from an aperture in said beam guide-isolator toward said faceplate and into a field of said anode whereupon the electrons in said beams are accelerated to a high energy to brightly activate said phosphor targets.

4,158,158

D.C. CONTROLLER FOR BATTERY POWERED ELECTRIC MOTOR

Joseph C. Burkett, 128 McDowell St., Welch, W. Va. 24801

Filed Aug. 7, 1978, Ser. No. 931,490
Int. Cl.² H02P 7/06
U.S. Cl. 318—139 **8 Claims**



1. A motor controller for a series connected D.C. motor having an armature and field and selectively energized forward and reverse circuits connecting said armature in series with said field so that current flow through said armature may be selectively reveresed to reverse the direction of rotation of said motor comprising,

first and second batteries,

circuit means for connecting said first and second batteries in series with said armature and field including a normally open electrically controlled switch connected between opposite terminals of said first and second batteries,

a first uni-directional conductor connected in series with said first battery and said armature and field and in parallel with said normally open switch and said second battery with the polarity of said first uni-directional conductor opposite that of the second battery,

a second uni-directional conductor connected in series with said second battery and said armature and field, and in parallel with said normally open switch and said first battery with the polarity of said second uni-directional conductor opposite that of said first battery,

said first uni-directional conductor and said first battery, and said second uni-directional conductor and said second battery being connected in parallel with said series motor,

and control means powered by at least one of said batteries for closing said normally open electrically controlled switch upon energization of said control means,

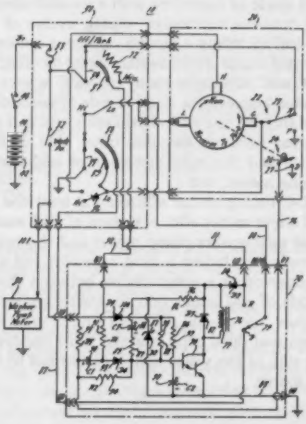
said control means including a control circuit having an electric actuator means for closing said normally open switch upon energization of said control circuit, an operator controlled switch for energizing said control circuit, time delay means for delaying the energization of said electric actuator means for a predetermined time after said operator controlled switch is closed, and means for selectively energizing one of said forward and reverse circuits of said motor including a directional control switch and forward and reverse relays which are selectively energized by said directional control switch.

4,158,159

ELECTRONIC CIRCUIT CONTROLLER FOR WINDSHIELD WIPER DRIVE MOTOR

Stephen J. Orris, Allen Park, and Frederick O. R. Misterfeld, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 792,379, Apr. 29, 1977, abandoned.
This application Apr. 5, 1978, Ser. No. 893,909
Int. Cl.² H02P 7/28
U.S. Cl. 318—443 **13 Claims**



1. A windshield wiper drive motor and washer pump motor control system affording an intermittent wipe mode of operation with selectable variable delay periods between successive wiping cycles, a first wipe-before-delay mode of operation and a wipe-after-wash mode of operation of said wiper motor, said wiper motor energized from a source of electrical potential and having a motor position operated dwell switch which is in one condition during an initial portion of each wiper motor rotational cycle and in another condition during the subsequent remainder portion thereof,

said system including

a double pole selector switch operable from an OFF to an ON position through a range of selectable dwell or delay period positions wherein one of the poles of the selector switch cooperates with and changes the resistance value

of an adjustable resistance device which controls the time delay period during which the wiper motor is de-energized between successive wiping cycles in the intermittent wipe mode of operation thereof,

a wash switch connected at one side to one side of said source of potential and at its other side to one side of said washer pump motor to activate the latter upon actuation of said wash switch, and

an electronic circuit controller including

relay switching means having a relay coil energizable to operate a S.P.D.T. relay switch from a first contact position to a second contact position in which one side of said relay coil and one side of said wiper motor are connected to one side of said potential source through said one pole of said selector switch in the ON position thereof, the other side of said wiper motor being connected to the other side of said potential source through the other pole of said selector switch in the ON position thereof, said relay operated switch in its first position connecting said one side of said wiper motor to the other side of said potential source through the said other pole of said selector switch in the ON position thereof,

semiconductor switching means controlling the operation of said wiper motor through said relay switching means in each of said modes of operation of said system and having an input control electrode and a pair of output electrodes of which the output electrodes are connected between the other side of said relay coil and the said other side of said potential source,

a first R-C timing circuit in said controller affording a first wipe-before-delay or instantaneous turn on mode of operation of said wiper motor with the actuation of said selector switch from its OFF position and including a first capacitor and a first resistor connected in a series circuit between the said one side of said relay coil and the input electrode of said semiconductor switching means,

a second R-C timing circuit affording an intermittent wipe control mode of operation with a variable dwell or delay period between successive wiping cycles of said wiper motor and including a second capacitor connected at one side to said motor dwell switch and at its other side to one side of said adjustable delay resistor, a second resistor connected between the said one side of said second capacitor and the said one side of said relay coil and a first diode connected between the said other side of said second capacitor and the input electrode of said semiconductor switching means, and

a third R-C timing circuit affording at least one wipe cycle of said wiper motor after actuation of said wash switch to activate said washer pump motor and the release of said wash switch including a third capacitor and a third resistor connected in a series circuit between the base input electrode of said semiconductor switching means and the said other side of said potential source with the junction between said third capacitor and third resistor connected to the side of the wash switch connected to said washer pump motor.

4,158,160

DRIVER'S SEAT WITH AUTOMATIC WEIGHT ADJUSTMENT

Hermann Meiller, Amberg, Fed. Rep. of Germany, assignor to Willibald Grammer, Fed. Rep. of Germany

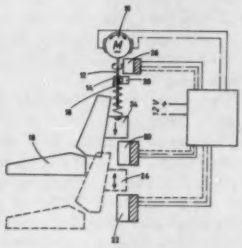
Filed Nov. 3, 1977, Ser. No. 848,120

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736242

Int. Cl.[2] H02P *2/00*

U.S. Cl. 318—467 **6 Claims**

1. A driver's seat with automatic weight adjustment, comprising a seat carrier mounted by means of a spring suspension, a reversible servo-motor for displacing the spring suspension to adjust the seating height, and scanning means which control the servo-motor and detect and determine the ideal or desired seating height with the aid of sensing means and an actuating member co-operating with the sensing means, the sensing means either being stationary and the actuating member being connected to the seat carrier for oscillation together therewith or vice versa, characterised in that the said sensing means comprise first and second sensors spaced apart by slightly more than the dimension of the said actuating member, the first sensor being allocated to an excessively high seat setting and



the second sensor being allocated to an excessively low seat setting, and that the said servo-motor is operable by the first sensor in the sense of lowering the seating height when the said actuating member reaches the detecting range of the said first sensor and in the sense of raising the seating height when the said actuating member reaches the detecting range of the said second sensor.

4,158,161

APPARATUS FOR GUIDING A WELDER OR THE LIKE ALONG A PREDETERMINED PATH

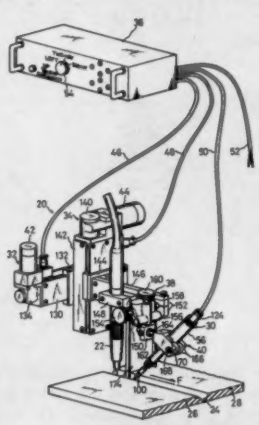
Kanekichi Suzuki, 55-6, 6-chome, Kameido, Koto-ku, Tokyo, Japan

Filed Nov. 30, 1977, Ser. No. 856,184

Claims priority, application Japan, May 14, 1977, 52/55583; Jul. 22, 1977, 52/98186[U]

Int. Cl.[2] G05D *1/00;* **B23K** *9/12*

U.S. Cl. 318—578 **6 Claims**



1. An apparatus for guiding a piece of equipment along a predetermined path and, upon sensing variations in the path, for correspondingly controlling the movement of such piece of equipment, comprising:

(a) a sensor assembly for sensing variations in the path by traveling in a predetermined direction therealong together with the guided piece, the sensor assembly comprising:

(1) a hollow elongated body;

(2) an arm disposed within the body and supported intermediate its ends for pivotal movement in any direction,

one end of the arm extending out of the body for sensing engagement with the path;

(3) first, second, third and fourth fixed contacts mounted within the body adjacent the other end of the arm and disposed at constant angular spacings about the axis of the body;

(4) a movable contact of substantially circular shape fixedly mounted on said other end of the arm and having a diameter greater than the distance between any two adjacent ones of the fixed contacts, whereby the movable contact is selectively engageable with any one or two adjacent ones of the fixed contacts depending upon a direction in which the arm is pivoted relative to the body by a variation in the path; and,

(5) means on the body biasing said other end of the arm in a direction substantially opposite to the predetermined traveling direction of the sensor assembly along the path, whereby the movable contact on the arm is normally held engaged with the first and second fixed contacts which are disposed adjacent to each other;

(b) first drive means for moving the sensor assembly and the guided piece in the opposite transverse directions of the path, the first drive means including a first electrically controlled actuator;

(c) second drive means for moving the sensor assembly and the guided pieces in opposite vertical directions with respect to the path, the second drive means including a second electrically controlled actuator; and,

(d) electrical circuit means connected between the four fixed contacts and the first and second actuators for controlling the operation of the first and second drive means according to which one or ones of the fixed contacts are engaged by the movable contact, the circuit means being effective to cause the first and second drive means to move the sensor assembly and the guided piece:

(1) downward when the movable contact is engaged with both first and second fixed contacts;

(2) upward when the movable contact is engaged with both third and fourth fixed contacts;

(3) in one transverse direction when the movable contact is engaged with both second and third fixed contacts;

(4) in the opposite transverse direction when the movable contact is engaged with both first and fourth fixed contacts;

(5) in both downward and said opposite transverse directions when the movable contact is engaged with only the first fixed contact;

(6) in both downward and said one transverse directions when the movable contact is engaged with only the second fixed contact;

(7) in both upward and said one transverse directions when the movable contact is engaged with only the third fixed contact; and,

(8) in both upward and said opposite transverse directions when the movable contact is engaged with only the fourth fixed contact.

4,158,162

TIME-PROPORTIONING CONTROL SYSTEM FOR EARTH-WORKING MACHINES

Royal R. Hawkins, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 20, 1977, Ser. No. 807,771

Int. Cl.[2] G05D 1/00

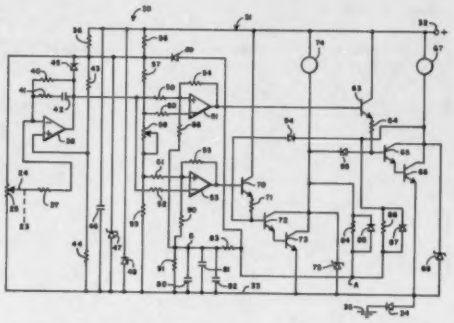
U.S. Cl. 318—587 **13 Claims**

1. A control arrangement for controlling an on-off solenoid valve of an earth working machine comprising:

sensing means responsive to an external reference for producing an error signal;

amplifier switching means having input means connected to said sensing means for receiving said error signal and an output means adapted to supply an output signal to the solenoid valve, said output signal being either on or off dependent upon the magnitude of said error signal; and,

capacitor feedback means connecting said output means to said input means of said amplifier switching means for



time proportioning said output signal, said output signal having on and off times dependent upon the magnitude of said error signal, said output signal being continuously on when said error is greater than a predetermined value.

4,158,163

INVERTER CIRCUIT

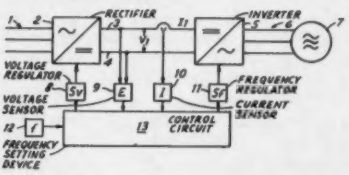
Henry R. Eriksen, Nordborg, and Hans M. Beierholm, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 19, 1977, Ser. No. 843,408

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 2648150

Int. Cl.[2] H02P 5/34

U.S. Cl. 318—798 **26 Claims**



1. An inverter circuit assembly for operating an adjustable speed asynchronous motor with a constant slip frequency, comprising an inverter, a three phase rectifier for converting a three phase supply to DC, a pair of conductors between said rectifier, and said inverter, a voltage regulator for regulating the output voltage of said rectifier, a frequency regulator for regulating the output frequency of said inverter, a frequency setting control device having a data value (f), a voltage measurer and a current measurer between said rectifier and said inverter having data values (E) and (I), a control unit for processing said values (f), (E) and (I) to form control signals for said voltage regulator and said frequency regulator, a computer circuit in said control unit having a built in constant (k_1) inversely proportional to the predetermined slip frequency and a constant (k_2) proportional to the winding resistance of the motor stator, said computer circuit being operable to calculate a computed value based on two of said three data values and said constants, and a comparator in said control unit for controlling said voltage regulator which inputs and compares the other one of said three data values and said computed value, said frequency regulator being controlled by said computed value when said data value (f) is a compared value, and said frequency regulator being controlled by said data value (f) when one of the other of said data values is a compared value.

4,158,164

PHASE CONTROL OF POWER TO A LOAD USING A SINGLE CAPACITOR

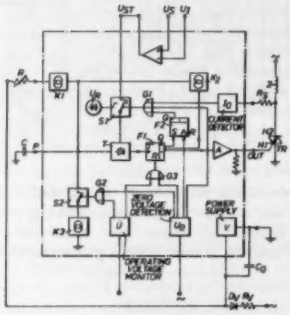
Karl-Diether Nutz, Heilbronn, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Jun. 21, 1977, Ser. No. 808,627

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629831

Int. Cl.[2] G05F *1/44;* H03K *4/08*

U.S. Cl. 323—24 **5 Claims**



5. A monolithically integrated circuit for producing phase angle conduction control triggering pulses to control the delivery of current to a load from an a.c. mains, comprising: a single storage capacitor; a comparator having one input connected to receive the voltage across said capacitor; a flip-flop having a trigger input connected to the output of said comparator and arranged to have each pulse applied to its trigger input effect complementing of the output state of said flip-flop; current source means connected for charging said capacitor to produce a ramp voltage synchronized with the a.c. mains voltage; voltage source means connected to the other input of said comparator such that said comparator produces an output pulse each time the ramp voltage reaches a value determined by the voltage at the other input, said voltage source means providing an adjustable threshold value voltage and a reference voltage, and including means controlled by said flip-flop for initially applying the threshold value voltage to the other input of said comparator, and for then applying the reference voltage to the other input of said comparator and initiating recharging of said capacitor, after said comparator has delivered an output pulse to said flip-flop while the threshold value voltage was being applied to the other input of said comparator.

4,158,165

APPARATUS AND METHOD FOR DETERMINING SUBSURFACE FORMATION PROPERTIES

George R. Coates, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 806,983

Int. Cl.[2] G01V *3/18, 3/12*

U.S. Cl. 324—6 **68 Claims**

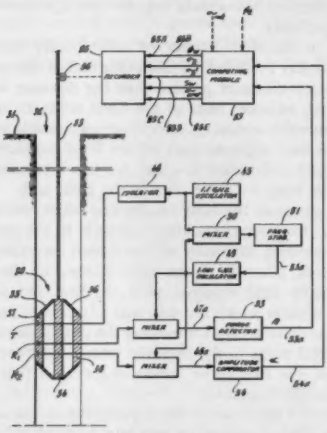
1. Apparatus for determining the water-filled porosity of formations surrounding a borehole, comprising:

means for deriving a first quantity representative of the attenuation of microwave electromagnetic energy propagating between spaced locations in the borehole;

means for deriving a second quantity representative of the relative phase shift of microwave electromagnetic energy propagating between said spaced locations in the borehole;

means for deriving a third quantity representative of the conductivity of the water in the formations surrounding said spaced locations; and

means for generating a fourth quantity which is proportional



to the product of said first and second quantities and inversely proportional to said third quantity;

said fourth quantity being indicative of the water-filled porosity of said formations.

4,158,166

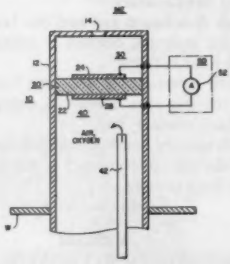
COMBUSTIBLES ANALYZER

Arnold O. Isenberg, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1976, Ser. No. 744,898

Int. Cl.[2] G01N *27/42*

U.S. Cl. 324—29 **6 Claims**



1. A combustibles sensor apparatus operative in a monitored combustibles gas environment to measure the combustibles constituent content, comprising,

an adapter having a means defining gas diffusion limiting aperture,

means for establishing a diffusion of a combustibles constituent of interest from a monitored combustibles gas environment through said aperture, and

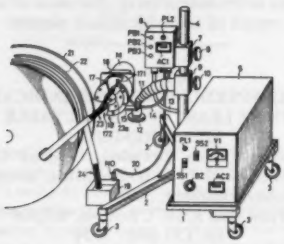
means for measuring the rate of diffusion of said combustibles constituent through said aperture as an indication of the combustibles constituent content of said monitored combustibles gas environment.

4,158,167

APPARATUS AND METHOD FOR ELECTRICALLY TESTING MULTI-CORE CABLES AND AUTOMATICALLY INDICATING THE PRESENCE OF A DEFECTIVE CORE

Shogo Tanno, Nishinomiya, and Masateru Hirose, Takarazuka, both of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Filed Oct. 25, 1977, Ser. No. 845,364
Claims priority, application Japan, Oct. 26, 1976, 51-128946
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 19 Claims



18. A method for electrically testing the conductive state of a multi-core cable having first and second cable ends and including a plurality of insulated cores each comprising a conductor wire and an insulation covering said conductor wire, comprising the steps of collectively rendering said plurality of cores conductive at said second end of said cable while isolating said plurality of cores from each other at said first end of said cable, urging said plurality of insulated cores at said first end against moving means having a notch in a surface thereof for picking up said cores into the notch, one by one at said first end, confining a picked up core in said notch of said moving means by confining means located immediately adjacent said moving means and extending to a predetermined length between an inlet end and an outlet end while said picked up core is being transported from said inlet end to said outlet end, detecting at a first location anywhere between said inlet and outlet end whether or not a core has been picked up at said one end by said notch of said moving means during the time period when said core is confined and transported and providing an electrical signal indicative thereof, detecting at a second location anywhere between said inlet and outlet ends, spaced from said first location, the conductive state of said picked up core between said first and second ends of said core when all cores are collectively rendered conductive and providing an electrical signal indicative thereof, and determining whether or not said picked up core is acceptably conductive before said picked up core reaches said outlet end, said determining being based on the signal indicating the detection of pick-up and the signal indicating the detective conductive state.

4,158,168

ACOUSTIC WAVEGUIDES FOR SENSING AND LOCATING CORONA DISCHARGES

Ronald T. Harrold, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1977, Ser. No. 858,034
Int. Cl.[2] G01R *31/08, 31/12*
U.S. Cl. 324—52 5 Claims

1. Apparatus for detecting and locating acoustic emissions from a source of corona discharge in electrical apparatus, comprising:

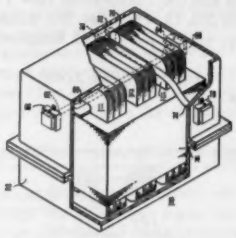
a tank containing an insulating fluid;

electrical apparatus disposed within said tank;

acoustic waveguide means having first and second ends, and an intermediate portion, with at least the intermediate portion being disposed within said tank;

first and second acoustic sensor means outside said tank;

and first and second coupling means acoustically coupling the first and second ends, respectively, of said acoustic waveguide means and said first and second sensor means, respectively, through said tank, while acoustically isolating said acoustic waveguide means from said tank, with said acoustic waveguide means forming a continuous path between said first and second acoustic sensor means such



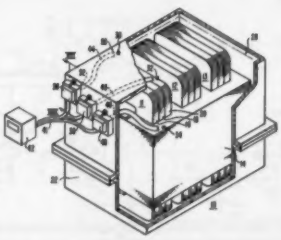
that an acoustic emission from a source of corona discharge within the tank will impinge upon and enter the surface of said acoustic waveguide means at any point thereon, to be simultaneously transmitted to both said first and second sensor means at the same rate, wherein the sensor which receives the emission first, and the time delay before the other sensor receives it, indicates the entering point of the emission on the acoustic waveguide means.

4,158,169

CORONA TESTING APPARATUS INCLUDING ACOUSTIC WAVEGUIDES FOR TRANSMITTING ACOUSTIC EMISSIONS FROM ELECTRICAL APPARATUS

Ronald T. Harrold, and Allan I. Bennett, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1977, Ser. No. 858,054
Int. Cl.[2] G01R *31/08, 31/12*
U.S. Cl. 324—52 10 Claims



1. Apparatus for detecting and locating acoustic emissions from a source of corona discharge in electrical apparatus, comprising:

a tank containing an insulating fluid,

electrical apparatus disposed within said tank,

acoustic waveguide means, at least a portion of said waveguide means being disposed within said tank, adjacent to said electrical apparatus,

sensor means outside said tank,

and coupling means acoustically coupling said acoustic waveguide means and said sensor means through said tank, while acoustically isolating said acoustic waveguide means from said tank, said sensor means providing a corona responsive signal in response to corona discharge initiated acoustic emissions in said electrical apparatus,

which are transmitted to said sensor means via said waveguide means.

4,158,170

LINE CURRENT DETECTOR

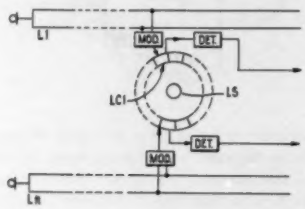
Henley F. Sterling, Great Dunmow; Donald A. Weir, Goff's Oak, near Cheshunt; Rodger G. George, and John V. Baxter, both of Bishops Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,608

Claims priority, application United Kingdom, Jul. 20, 1976, 30136/76

Int. Cl.[2] G01R *31/00*

U.S. Cl. 324—96 **11 Claims**



2. An apparatus as claimed in claim 1, in which each said optical device is an electro-optic crystal device so arranged that the polarization condition of the medium of crystal device is influenced by the line current, and in which said light source is a source of polarised light, such that the cell passes light therefrom when the line is looped but not when it is unlooped.

4,158,171

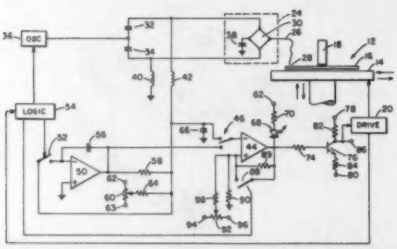
WAFER EDGE DETECTION SYSTEM

Robert C. Abbe, Newton, and Noel S. Poduje, Needham Heights, both of Mass., assignors to ADE Corporation, Watertown, Mass.

Filed Sep. 14, 1977, Ser. No. 833,258

Int. Cl.[2] G01R *31/02, 27/26, 35/00*

U.S. Cl. 324—158 F **16 Claims**



1. An edge detecting system comprising:

a capacitive distance gauging probe having an electrical conductor as a capacitance sensitive element of said probe;

means for energizing said probe to provide an output signal representative of capacitance sensed by said probe conductor and thereby adapting said probe to provide an output indication of the proximity of said conductor to an edged element capable of motion toward and away from said conductor in combination with motion of said element in a direction to bring said conductor along said element toward and away from the edge thereof;

means for adjusting the value of said output indication in response to a control;

compensating means having first and second states and operative in the first state thereof in response to the probe output signal for providing an indication of placement of said conductor with respect to an edge of said element;

said compensating means being further adapted for operation in the second state thereof in response to the probe output signal when said element is moved away from said conductor to provide a control for said adjusting means which, in the first state of said compensating means, provides an output indication corresponding to a predetermined reference output in combination with an output representative of the difference in capacitance sensed by said probe in the away and near conditions; and

means for controlling a direction of motion of said element in response to the indication of placement of said conductor with respect to said edge of said element.

4,158,172

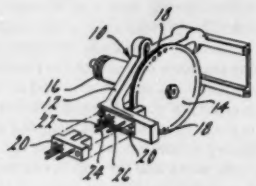
DIGITAL SPEEDOMETER FOR INDICATING VELOCITY IN AT LEAST TWO SELECTABLE UNITS OF MEASUREMENT

Curtis E. Boyer, Canton Township, Oakland County, and Jacques Mosier, South Lyon, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1977, Ser. No. 857,539

Int. Cl.[2] G01P *3/54*

U.S. Cl. 324—166 **7 Claims**



1. A digital speedometer for indicating angular or linear velocity in at least two selectable units of measurement, which comprises:

means for generating a pulsating electrical signal having a pulse repetition frequency proportional to the angular or linear velocity to be indicated;

means for repetitively generating a counting period electrical signal having a predetermined duration representative of a counting period;

a binary counter having an input terminal and a plurality of output terminals, said binary counter being able to count pulses occurring at its input terminal and being able to retain the count in the form of a binary number electrical signal at its output terminals;

means for gating said pulsating electrical signal into said input terminal of said binary counter during said counting period;

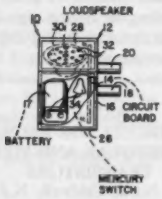
circuit means, coupled to said binary counter, for providing a visible display of the magnitude of the count stored in said binary counter at the end of said counting period, said visible display being in decimal system numerals equivalent in magnitude to the binary number count to be displayed;

switch means for selecting between first and second voltage levels, the selected voltage level being applied to said means for generating said counting period electrical signal and determining the duration of said counting period, said first voltage level when so applied causing said visible display to be in a first unit of measurement and said second voltage level when applied causing said visible display to be in a second unit of measurement, and circuit means for preventing said display means from indicating a velocity in excess of a predetermined velocity applicable to the unit of measurement being displayed.

4,158,173
MERCURY SWITCH ACTIVATED RADIO

Remo Saraceni, 1919 Brandywine St., Philadelphia, Pa. 19130

Filed Aug. 17, 1977, Ser. No. 825,408
Int. Cl.[2] H04B 1/08, 1/16
U.S. Cl. 325—361 7 Claims

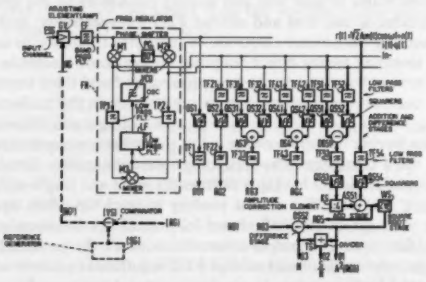


1. A transistor radio suitable for resting upon a supporting surface comprising circuitry and a mercury switch, each positioned within an outer housing, said housing having a generally cubical shape, said mercury switch being connected in a fixed position relative to said housing so as to be movable between circuit activating and circuit deactivating conditions by the movement of said housing among different stable positions corresponding to said conditions, said mercury switch being positioned within the housing so that it will be in a circuit-activating condition when any one of several different surfaces of the housing is maintained in at least one of said stable positions corresponding to said circuit-activating condition and in engagement with the supporting surface, and in a circuit deactivating condition when the housing is maintained in any one of other stable positions corresponding to said circuit-deactivating condition said radio being in an "on" mode when the circuitry is activated and in an "off" mode when the circuitry is deactivated.

4,158,174
CIRCUIT ARRANGEMENT FOR THE PRODUCTION OF A CONTROL SIGNAL IN A RECEIVING CHANNEL WHICH IS SUBJECT TO INTERFERENCE

Gerhard Gruenberger; Heinz Merkle, both of Munich, and Anton Sunkler, Otterfing, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1977, Ser. No. 814,886
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631460
Int. Cl.[2] H04B 1/16
U.S. Cl. 325—404 5 Claims



1. In a circuit arrangement for the production of a level regulation control signal of the type wherein a receiving channel receives an input signal which is subject to interference and includes means for forming an amplitude-dependent control signal from a phased input signal, wherein the receiving channel comprises a frequency regulating circuit including an oscillator which is synchronized by the received signal which is superheterodyned by the received signal in first and second mixers with the oscillator output signal directly and with a 90° phase shift, respectively, and wherein the mixing products are fed through first low pass filters to obtain signals which indicate the frequency shift between the input signal frequency and the oscillator frequency and then fed via a third mixer to obtain an adjusting control signal for tuning the oscillator, the improvement therein comprising:

second low pass filters connected to respective outputs of the first and second mixers, respectively;

first squarers connected to said second low pass filters;

a difference stage connected to said first squarers;

a third low pass filter connected to said difference stage;

a second squarer connected to the output of said third low pass filters;

a fourth low pass filter connected to the output of said third mixer;

a third squarer connected to said fourth low pass filter;

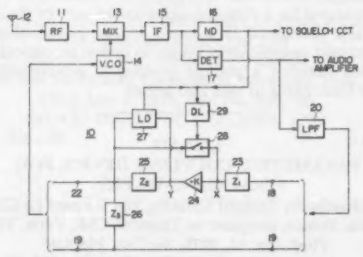
an addition stage including one input connected to said second quarter and another input connected to said third squarer; and

an amplitude correction circuit interposed between said second squarer and said other input of said addition stage to cancel phase error signal components and noise components of the input signal and provide an error-free output signal from said addition stage.

4,158,175
CIRCUIT FOR AUTOMATICALLY SWITCHING OPERATING MODES OF FEEDBACK-CONTROLLED SYSTEMS

Kazuya Toyomaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Mar. 6, 1978, Ser. No. 883,845
Claims priority, application Japan, Mar. 7, 1977, 52-26237[U]; Mar. 9, 1977, 52-24744
Int. Cl.[2] H04B 1/16
U.S. Cl. 325—420 26 Claims



12. An automatic frequency control circuit for a radio receiver having a mixer and adapted to receive radio signals on frequency-divided channels, comprising, a voltage controlled oscillator to provide a local oscillation signal with which said received signal is mixed in said receiver to generate an intermediate frequency signal, means for detecting the deviation of the intermediate frequency signal from the intermediate frequency signal center frequency, a feedback path having an input terminal connected to the output of said deviation detecting means and an output terminal connected to the input of said voltage-controlled oscillator including first impedance means, an inverting amplifier and second impedance means all of which are connected in the order named from said input terminal to said output terminal, third impedance means connected between said output terminal and a reference terminal, a level detector connected across said second impedance means to provide an output signal when the voltage thereacross exceeds a predetermined threshold level, and switching means connected betwen the input of said inverting amplifier and said output terminal of

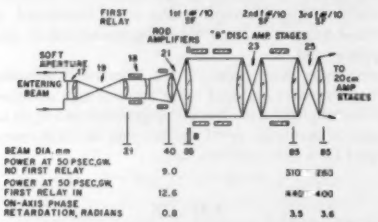
the feedback path to provide a short-circuit path therebetween in response to the output signal from said level detector, said inverting amplifier having a large value of amplification factor as compared with Z_2/Z_1 and Z_2/Z_3 wherein Z_1, Z_2 and Z_3 are the impedance values of said first, second and third impedance means, respectively.

4,158,176

SPATIAL FILTER SYSTEM AS AN OPTICAL RELAY LINE

John T. Hunt, and Paul A. Renard, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,972
Int. Cl.² H01S *3/02*
U.S. Cl. 330—4.3 **7 Claims**


FIRST RELAY
1st 1 m/10 SF
2nd 1 m/10 SF
3rd 1 m/10 SF
ROD AMPLIFIERS
"8" DISC AMP STAGES
SOFT APERTURE
ENTERING BEAM
TO 20 cm AMP STAGES
BEAM DIA. mm
POWER AT 50 PSEC, GW, NO FIRST RELAY
POWER AT 50 PSEC, GW, FIRST RELAY IN
ON-AXIS PHASE RETARDATION, RADIANS

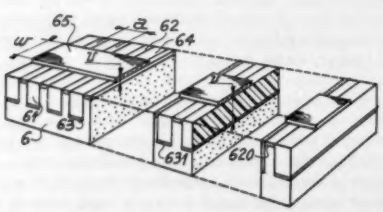
1. An apparatus acting as an optical relay which translates substantially all rays in a laser beam from an initial position where the power density is low through a plurality of high power amplification stages to a downstream position where the effective optical path length from said initial position is substantially zero and the power density is high with minimal diffraction effects, phase distortion and beam intensity fluctuations, said apparatus comprising at least one spatial filter assembly positioned at a selected spaced relation between said amplification stages; said spatial filter assembly consisting of a pair of lenses separated by a distance equal to the sum of their focal lengths and positioned in selected spaced relationship with respect to said amplification stages to define an optical relay, and means defining a pinhole positioned substantially at a common focal plane of said two lenses.

4,158,177

PARAMETRIC COUPLING DEVICE FOR TRAVELING-WAVES

Yves Archambault; Bernard Epsztein, and Bernard Le Clerc, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 13, 1978, Ser. No. 915,128
Claims priority, application France, Jun. 17, 1977, 77 18622
Int. Cl.² H03F *7/04*
U.S. Cl. 330—4.6 **9 Claims**



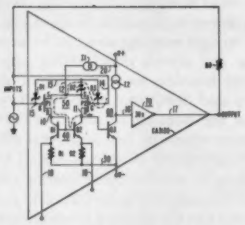
1. Parametric coupling device for traveling-waves comprising a first signal wave, a second idler wave and a third pump wave, wherein a transmission line for said three traveling-waves is formed on a substrate of dielectric material, which comprises a virtually continuous and substantially plane network of integrated diodes, modulated by the pump wave, and so modulating the conduction properties of the transmission line and enabling intermodulation to be set up between the various traveling-waves, said virtually continuous network of integrated diodes being a substantially plane network, each diode being at a distance a, or pitch of the network, from a neighbouring diode, said distance or pitch being less than the smallest of the wavelengths of the signal, idler, and pump waves, and said plane network being disposed in the neighbourhood of the transmission line.

4,158,178

ANTI-LATCH CIRCUIT FOR AMPLIFIER STAGE INCLUDING BIPOLAR AND FIELD-EFFECT TRANSISTORS

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 906,005
Int. Cl.² H03F *3/45*
U.S. Cl. 330—253 **8 Claims**



1. In an electrical circuit having first and second insulated gate field effect transistors or FET's with respective drain and source and gate electrodes arranged in long-tailed pair configuration with means for applying input voltages to their gate electrodes and with a source of tail current connected to an interconnection of their source electrodes; means connected between the gate and source electrodes of at least one of said FET's for limiting the maximum potential that may be imposed on the gate electrode relative to the source electrode; first, second and third bipolar transistors of a first conductivity type with respective base and emitter and collector electrodes and with respective base-emitter junctions and base-collector junctions; first and second resistive means connected between a first terminal for application of an operating potential and the emitter electrodes of said first and second transistors respectively; means direct-coupling the collector electrode of said first transistor to an interconnection of the base electrodes of said first and second transistors, means connecting the collector electrodes of said first and second transistors to the drain electrodes of said first and second FET's respectively; means connecting the emitter electrode of said third transistor to said first terminal; means direct coupling the collector electrode of said second transistor to the base electrode of said third transistor; current source load means connected at the collector electrode of said third transistor; and voltage amplification means having its input connected at the collector electrode of said third transistor—the foregoing interconnections forming an amplifier circuit having a differential input and single-ended output, said amplifier circuit tending to latch up when operated with direct-coupled closed-loop feedback between said amplifier input and output connections when the potential at the gate electrode of said second FET is sufficient to cause said potential limiting means to conduct a current between the gate and source electrode of said second FET, said current flowing between the collector and emitter electrodes of said first transistor and through said first resistor generating a potential at the base electrode of said second transistor sufficient to forward bias the base-collector junction of said second transistor and provide current to drive the base electrode of said third transistor into saturation to give rise to the latch-up condi-

tion—the improvement for preventing said latch-up condition comprising:

means for clamping the base of said second transistor whenever the potential thereat approaches a level sufficient to forward bias the base-collector junction of said second transistor, to forestall its reaching that level.

4,158,179

AMPLIFIER CIRCUIT

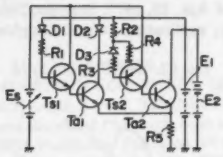
Kazumasa Sakai, and Tatsuhiko Okuma, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,993

Claims priority, application Japan, Apr. 19, 1976, 51-44560; Apr. 19, 1976, 51-44561

Int. Cl.[2] H03F *3/04*

U.S. Cl. 330—297 **11 Claims**



1. An amplifier circuit comprising:

an input means adapted to be connected to an input signal to be amplified;

at least two sets of combined amplifying elements and associated power sources, one of said sets constituting a first amplifying stage and another constituting a second amplifying stage; each of said amplifying stages being adapted to amplify an input signal connected to said input means;

switching means comprising transistors connected between said input means and each of said amplifying elements for switching the amplifying operation of the amplifier circuit from one of said amplifying stages to another of said amplifying stages in accordance with a predetermined amplitude for the input signal;

a load to which each of said amplifying stages is connected in parallel; and

wherein the voltage of the power source of said first amplifying stage is lower than the voltage of the power source of said second amplifying stage, said first amplifying stage operates to provide electrical energy to said load when the input signal is lower than the voltage of the power source of said first stage, and said second stage operates to provide electrical energy to said load when the input signal is higher than the voltage of the power source of said first stage but lower than the voltage of the power source of said second stage.

4,158,180

TEMPERATURE CONTROL CIRCUIT

Richard F. Challen, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Apr. 13, 1978, Ser. No. 896,033

Int. Cl.[2] H03G *3/20*

U.S. Cl. 330—298 **9 Claims**

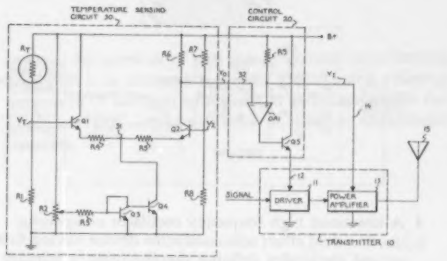
1. An improved circuit for controlling the magnitude of current supplied to a driver circuit which delivers an alternating current signal to a power amplifier, said improved circuit comprising:

a. a temperature sensing circuit comprising a first differential circuit for sensing the difference between a voltage provided by a temperature sensitive resistor in a resistive divider and a voltage provided by a temperature insensitive resistive divider for producing a temperature voltage that varies as a function of the change in temperature of said temperature sensitive resistor, said first differential circuit including current control means that determine the minimum value of said temperature voltage;

b. a source of current for said driver circuit and said power amplifier;

c. a second differential circuit having first and second inputs and an output which produces a difference signal that varies as a function of the relative magnitude of voltages applied to said first and second inputs;

d. first means connecting said temperature sensing circuit to said first input of said second differential circuit for applying said temperature voltage thereto;



e. second means connected to said source of current for said power amplifier for producing a second voltage that varies as a function of the current supplied to said power amplifier;

f. third means connecting said second means to said second input of said second differential circuit for applying said second voltage thereto;

g. and fourth means connected to said output of said second differential circuit and to said driver circuit for controlling the current supplied to said driver circuit as a function of said difference signal.

4,158,181

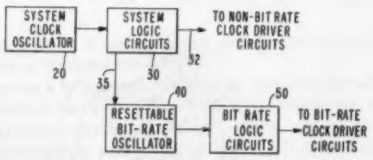
DUAL CLOCK LOGIC SYSTEM FOR CHARGE-COUPLED DEVICE DRIVER CIRCUIT

Harvey L. Balopole, Little Neck, N.Y., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 3, 1978, Ser. No. 892,705

Int. Cl.[2] H03B *3/04, 5/08;* H03K *1/17*

U.S. Cl. 331—55 **8 Claims**



1. A system for generating a bit-rate and a non bit-rate signal for controlling a charge coupled area imaging device and synchronizing the bit-rate signals with the non bit-rate signals, the system comprising:

master oscillator means for generating a master frequency signal;

logic circuit means connected to the master oscillator means for deriving the non bit-rate signal and a periodic reset signal from the master frequency signal; and

resettable oscillator means for generating the bit-rate signal, the resettable oscillator means being connected to the logic circuit means to receive therefrom only the periodic reset signal, the periodic reset signal initiating the generation of the bit-rate signal by the resettable oscillator means to synchronize it with the non bit-rate signal, the resettable oscillator means including an inductor-capacitor

circuit which oscillates at the frequency of the bit-rate signal except when the periodic reset signal is applied.

4,158,182

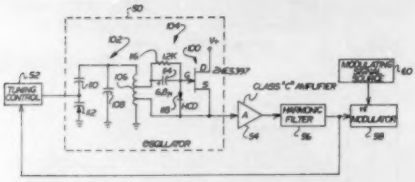
LOW NOISE OSCILLATOR CIRCUIT

Clyde Washburn, Fairport, N.Y., assignor to Harris Corporation, Cleveland, Ohio

Filed Jul. 31, 1978, Ser. No. 929,316

Int. Cl.[2] H03B *5/12*

U.S. Cl. 331—117 R **8 Claims**



1. A low noise high frequency oscillator comprising:

a junction field effect semiconductor device having first and second electrodes defining therebetween a primary current path, and a gate electrode for controlling current flow between said first and second electrodes;

a tuned circuit coupled between at least one of said first and second electrodes and said gate electrode;

a gate bias circuit for providing a DC bias voltage to said gate electrode including a capacitor coupled between said gate electrode and a power supply connection, and a resistor connected to provide a DC current path across said capacitor,

wherein said capacitor and resistor of said gate bias circuit have values selected so that said gate bias circuit has a low impedance at selected noise frequencies,

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4,158,183

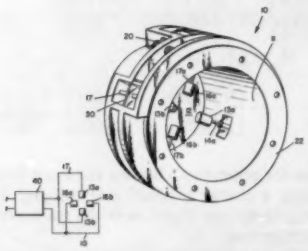
COMPACT, IN-PLANE ORTHOGONAL MODE LAUNCHER

Mon N. Wong, Culver City, and Stanley T. Ibrao, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 22, 1976, Ser. No. 753,034

Int. Cl.[2] H01P *1/17*

U.S. Cl. 333—21 A **4 Claims**



1. A compact in-plane microwave signal launcher having improved bandwidth, comprising:

right cylindrical housing having an open and a closed end;

first and second means for receiving first and second microwave input signals respectively, said first and second means being disposed on and about said cylindrical housing, and said first means for providing first and second signals being 180° out of phase, said second means being for providing third and fourth signals being 180° out of phase;

first and second cylindrical probe means radially disposed within and extending outward through said cylindrical housing means along opposing radials for receiving said first and second signals, respectively, and for generating a first field therebetween having a first direction; and

third and fourth cylindrical probe means radially disposed within said cylindrical housing means along opposing radials for receiving said third and fourth signals, respectively, and for generating a second field therebetween having a direction being 90° to said first field for generating circularly polarized waves having first and second senses, said third and fourth probe means being coplanar with said first and second probe means.

4,158,184

ELECTRICAL FILTER NETWORKS

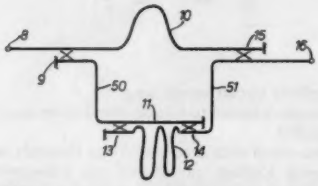
Norman D. Kenyon, Ipswich, England, assignor to Post Office, London, England

Filed Apr. 25, 1977, Ser. No. 790,554

Claims priority, application United Kingdom, Apr. 29, 1976, 17481/76

Int. Cl.[2] H01P *1/20, 5/18*

U.S. Cl. 333—208 **11 Claims**



1. A filter network comprising an input port, an output port and, between the input and output ports, a main transmission path and at least one pair of secondary transmission paths such that:

(i) in each pair of secondary paths the electrical lengths of the paths are unequal while their average is the same as the electrical length of the main path;

(ii) the average frequency-independent component of phase change undergone by a signal transmitted along each pair of secondary paths differs by an integral multiple of π radians from that undergone by a signal transmitted along the main path, where the integral multiple may be positive, negative or zero, and

(iii) for each pair of secondary paths, a transmitted signal has the same wave amplitude in each path.

4,158,185

OVERHEAD TRANSMISSION LINE WITH COMMUNICATION CORE

Hans-Gerd Dageförde, Duisburg, and Günter Thönnessen, Monheim, both of Fed. Rep. of Germany, assignors to AEG-TELEFUNKEN Kabelwerke Aktiengesellschaft, Rheydt, MönchenGladbach, Fed. Rep. of Germany

Filed Apr. 5, 1977, Ser. No. 784,791

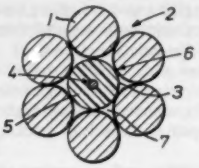
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2615311

Int. Cl.[2] H01B *11/18*

U.S. Cl. 333—243 **10 Claims**

1. An overhead transmission line comprising, in combination: a coaxial line element composed of a central conductor and an insulating sheath concentrically surrounding said central conductor; a plurality of power current conductors of circular cross section presenting electrically conductive surface portions and disposed around said coaxial line element in such a manner, that adjacent current conductors contact one another and said insulating sheath, the surface regions of said power conductors which face said sheath together defining a

cage-like return conductor enclosing said central conductor, said coaxial line element and return conductor together defining a communications core; high frequency choke means connecting said central conductor to said power current conductors in a manner to establish a short circuit with respect to the



alternating current frequency of the power to be transmitted by said current conductors; and coupling means including a blocking capacitor and a decoupling transformer connected to said central conductor for coupling said central conductor into a communications system.

4,158,186

CORE LAMINATION FOR SHELL-TYPE CORES, PARTICULARLY FOR TRANSFORMERS

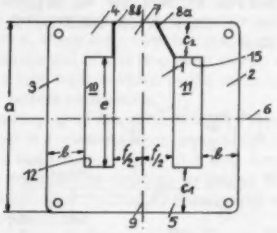
Karl Philberth, and Bernhard Philberth, both of Peter-Rosegger-Strasse 6, D 8031 Puchheim, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 838,978

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650074

Int. Cl.² H01F *27/24*

U.S. Cl. 336—217 **18 Claims**



1. Core laminations for shell-type cores, comprising said laminations alternately interleaved, each of said core laminations having a center leg, two outer legs parallel thereto at a certain distance, and two yokes connecting the ends of said legs, at least one joint being provided between one side of the center leg and the adjacent yoke for interleaving in the winding, and the other yoke having no joints with the center leg and the two outer legs wherein the width of the jointlessly connecting yoke is at least 5% greater than that of the parted yoke ($c_1 > c_2$).

4,158,187

MEANS FOR AFFIXING FERRULES TO A FUSE CASING

Richard J. Perreault, Amesbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 5, 1977, Ser. No. 819,064

Int. Cl.² H01H *85/02*

U.S. Cl. 337—248 **3 Claims**

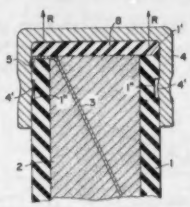
1. An electric fuse including

(a) a tubular casing of electric insulating material having flat rims and containing a granular arc-quenching filler;

(b) a fusible element embedded in said filler, conductively interconnected by blind solder joints to a pair of ferrules mounted on the axial ends of said casing;

(c) a pair of heat resistant elastomeric elements each mounted between one of said rims of said casing and one of said pair of ferrules, said elements having a cross-section at least as large as the cross section of said rims of said casing, tending upon compression to move said pair of ferrules in a direction longitudinally of said casing;

(d) said casing having a pair of circular grooves directly



engaged by portions of said pair of ferrules once having been rolled or crimped into said grooves and resisting movement of said pair of ferrules in accordance with the forces exerted by said pair of heat resistant elastomeric elements.

4,158,188

FUSE WITH FREE STANDING HELICAL FUSE ELEMENT AND METHOD OF MAKING THE SAME

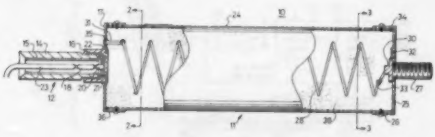
John F. Howard, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Canada

Filed Jun. 22, 1978, Ser. No. 918,201

Claims priority, application Canada, Aug. 19, 1977, 285128

Int. Cl.² H01H *85/04*

U.S. Cl. 337—290 **11 Claims**



1. A method of making a high voltage, current limiting fuse section, comprising the steps of:

forming a helical coil of a resilient fuse element with a foot portion and a head portion at either end thereof, said head portion extending from said helical coil in a direction substantially parallel to the axis of said helical coil,

mounting said foot portion to the inner side of a first end cap,

securing said first end cap to one end of a cooperating, hollow, cylindrical, insulating casing, said coil being within said casing and spaced from the walls of said casing,

engaging said head portion and withdrawing said head portion until it extends partly past the open end of said casing,

filling said casing with pulverulent arc quenching material,

securing a second end cap to the open end of said casing, part of said head portion projecting through a small opening in said second end cap,

bending the projecting part of said head portion against the outer side of said second end cap and securing it thereto, and

sealing said opening in said second end cap.

4,158,189

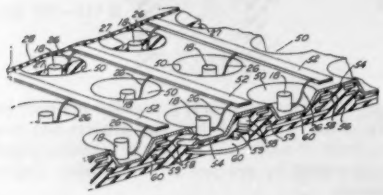
BAFFLED BLANKET ACOUSTIC ARRAY INCORPORATING AN INDENTED REACTION PLATE

William F. Wardle, Mystic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 825,325, Aug. 17, 1977, Pat. No. 4,140,992. This application May 15, 1978, Ser. No. 906,164

Int. Cl.[2] H04B *13/00, 11/00*

U.S. Cl. 340—9 **6 Claims**



1. A baffled blanket acoustic array system comprising:

an indented reaction plate having a plurality of indentations having a circular cross-section;

an acoustic array including a first compliant material located on one side of said indented reaction plate and an array of acoustic transducers embedded in said first compliant material each of said transducers being located in one of said indentations; and

an acoustic baffle including a second compliant material located on the other side of said reaction plate and a plurality of acoustically reactive baffle components embedded in said second compliant material.

4,158,190

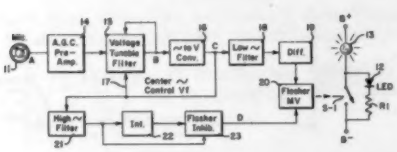
WAILING SIREN DETECTING CIRCUIT

Boris Stefanov, 1635 Lucile Ave., No. 8, Los Angeles, Calif. 90026

Filed Nov. 4, 1977, Ser. No. 848,461

Int. Cl.[2] G08G *1/00*

U.S. Cl. 340—34 **3 Claims**



1. A wailing siren detecting circuit including, in combination:

(a) a microphone for mounting on a car in a position to detect outside sounds;

(b) a pre-amplifier connected to said microphone including automatic gain control means to provide improved linearity at high signal input levels;

(c) a high Q voltage tunable band pass filter connected to the output of said pre-amplifier;

(d) a frequency to voltage converter connected to the output of said high Q voltage tunable band pass filter;

(e) a feedback means from the output of said frequency to voltage converter to said high Q voltage tunable band pass filter to shift the center frequency of said band pass filter as a function of the voltage output of said frequency to voltage converter whereby tracking of a dominant frequency by said band pass filter is achieved;

(f) a low frequency band pass filter receiving said voltage from said frequency to voltage converter for passing only low frequency signals;

(g) a full wave rectifier and differentiating circuit connected to the output of said low band pass filter for providing an output signal only in response to a continuously slowly varying voltage signal corresponding to the pitch variation of a wailing siren;

(h) an indicating means for mounting in said car;

(i) energizing means connected to said indicating means and to the output of said full wave rectifier and differentiating circuit for energizing said indicating means in response to the presence of said output signal from said full wave rectifier and differentiating circuit;

(j) high pass filter and amplifier means connected to the output of said frequency to voltage converter for passing only erratically rapidly varying high frequency noise signals developed as a result of tracking dominant noise frequencies;

(k) full wave rectifier and integrating circuit means connected to the output of said high pass filter and amplifier means providing an inhibit signal only when said voltage signal is erratically varying as a result of tracking said dominant noise frequencies; and

(l) inhibiting means connected between said indicating means and said full wave rectifier and integrating means for inhibiting operation of said indicating means in response to receiving said inhibit signal whereby said indicating means is only energized in response to a wailing siren.

4,158,191

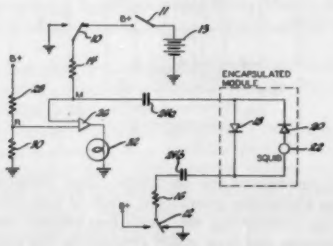
AIR CUSHION ACTUATION AND MONITORING CIRCUIT

Wesley A. Rogers, Grosse Pointe Park, and John T. Auman, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 27, 1978, Ser. No. 881,717

Int. Cl.[2] B60R *21/08*; G08B *21/00*

U.S. Cl. 340—52 H **4 Claims**



1. A control and indicating circuit for energizing the firing means of an inflatable safety system for a vehicle comprising; a source of direct current potential, first and second impact sensor switch means disposed on said vehicle and having a normal state wherein said first switch means is connected to one terminal of said source and said second switch means is connected to ground potential, said first and second switch means being movable to a second state in the event of an impact wherein said first switch means is connected to ground potential and said second switch means is connected to said one terminal of said source, a first uni-directional conducting device connected in series with said firing means between said first and said second switch means, said first uni-directional conducting device preventing current flow through said firing means when said first and second switch means are in said normal state and permiting current flow through said firing means when said first and second switch means are in said second state, a second uni-directional conducting device oppositely poled to said first uni-directional conducting device and connected in parallel with said first uni-directional conducting device and said firing means, first and second resistor means connected in series between said second uni-directional con-

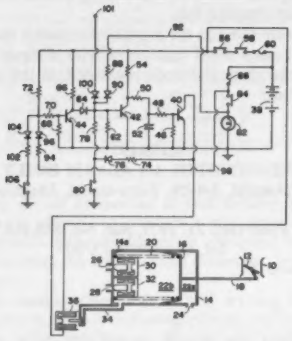
ducting device and said first and second impact sensor switch means respectively, and monitoring means for sensing a change in the voltage at the junction between one of said resistor means and said second uni-directional conducting device.

4,158,192

RELEASING DEVICE FOR AN AUTOMATIC FIXED SPEED DRIVING SYSTEM

Masahito Muto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 28, 1977, Ser. No. 846,556
Claims priority, application Japan, Aug. 1, 1977, 52/92870
Int. Cl.[2] F02D *11/00*
U.S. Cl. 340—62 **4 Claims**



1. A releasing device for an automatic fixed speed driving system for a motor vehicle having a stop lamp circuit including a power source, a stop lamp switch, a stop lamp fuse provided between one terminal of said stop lamp switch and said power source and a stop lamp coupled to the other terminal of said switch, said system comprising:

a first releasing signal detection means for supplying a releasing signal to a releasing signal input of the automatic fixed speed driving system when the stop lamp fuse is in a normal condition in response to the on action of a stop lamp switch accompanied by the manipulation of a motor vehicle brake; and

a second releasing signal detection means for supplying a releasing signal to a releasing signal input of the automatic fixed speed detection system when the stop lamp fuse is in an abnormal condition in response to the on action of the stop lamp switch accompanied by the manipulation of the motor vehicle brake.

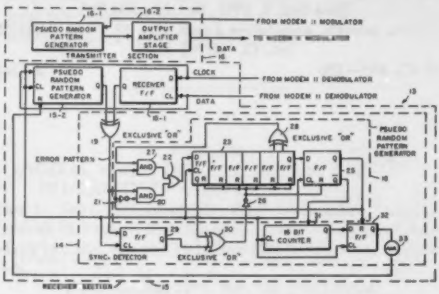
4,158,193

DATA TRANSMISSION TEST SET WITH SYNCHRONIZATION DETECTOR

Renato A. D'Antonio, North Attleboro, Mass., assignor to International Data Sciences, Inc., Lincoln, R.I.

Filed Jun. 6, 1977, Ser. No. 803,987
Int. Cl.[2] G08C *25/00*; H04L *17/00*
U.S. Cl. 340—146.1 D **4 Claims**

1. A synchronization detector for a data transmission test set comprising first means for exclusively "OR"ing a received data pattern and a first locally generated psuedo random pattern to provide an error pattern, second means for generating a second local psuedo random pattern identical in content to said first locally generated psuedo random pattern in response to said error pattern and clock pulses, third means for exclusively "OR"ing said error pattern and said second psuedo random pattern to provide control signals, and fourth means responsive to said control signals for generating an out of sync signal indicating that an out of synchronization condition exists between said received data and said first local psuedo random pattern, said fourth means comprising a counter for continuously receiving and counting clock pulses, a first flip-flop responsive to the output of said counter for providing an out of sync signal, and a second flip-flop forming a portion of said



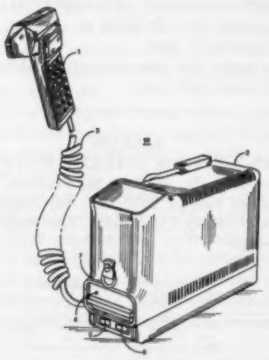
second means for controlling the resetting of said counter and said second flip-flop, said control signals also causing the resetting of said second means and the F/F thereof.

4,158,194

OPTICAL RECOGNITION SYSTEM

Lynn McWaters, Garland, and Robert B. Koenig, Dallas, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Dec. 27, 1976, Ser. No. 754,875
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 SY **4 Claims**

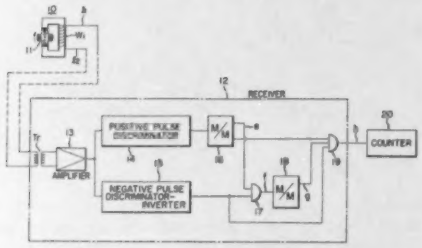


1. A portable self contained optical character recognition system including a hand held optical scanner which generates an electrical signal independent of distance scanned and representative of the data read by the scanner comprising; a hand held unit housing said scanner, a keyboard and a display, first processor means in said hand held unit controlling said keyboard and display, and a second processor unit in a portable console electrically attached to said hand held unit and including an optical character recognition system, said first processor takes information keyed in from the keyboard and relays it to the optical character recognition unit which in turn relays it to the display after processing, said second processor reading information scanned by the scanner and relaying the read information to the display.

4,158,195
PULSE TRANSMISSION-RECEPTION SYSTEM

Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1977, Ser. No. 831,793
Claims priority, application Japan, Sep. 18, 1976, 51-112035
Int. Cl.[2] H04Q *5/00*
U.S. Cl. 340—150 3 Claims



1. A pulse transmission-reception system characterized by the provision of

(a) a generator type pulse generating and transmitting means for generating a predetermined number of pulses for every one rotation of a rotor of said pulse generating and transmitting means, said rotor being intermittently rotatable through an angle corresponding to the desired number of pulses to be generated,

(b) pulse discriminating and selecting means for discriminating a desired number of pulses from a train of pulses transmitted from said pulse generating and transmitting means,

(c) logic circuit means for processing a train of pulses from said pulses discriminating and selecting means so as to derive a single pulse,

(d) counter means for counting said single pulse from said logic circuit means,

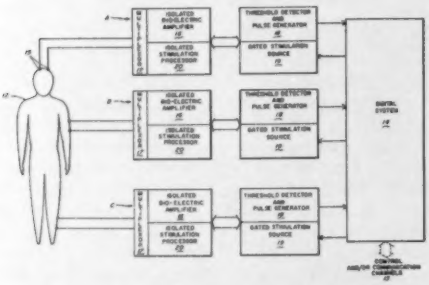
(e) spring means coupled to said pulse generating means for storing energy for intermittent rotation of said rotor through said angle, and

(f) trigger means for intermittently enabling said spring means to rotate said rotor.

4,158,196
MAN-MACHINE INTERFACE SYSTEM

George E. Crawford, Jr., 66 Dean St., Franklin, Mass. 02038

Filed Apr. 11, 1977, Ser. No. 786,232
Int. Cl.[2] H04Q *9/00*; A61B *5/00*; B62D *1/00*
U.S. Cl. 340—163 19 Claims



1. Apparatus for providing direct electrical transfer of information between a subject and a digital system comprising;

a plurality of individually isolated myo-electric responsive electrode means each for detecting an independently distinguishable myo-electric activity signal generated by the subject,

means for supporting the electrode means each at a selected site on the subject with adjacent electrode means being sufficiently spaced to permit interpretation of each of the independent myo-electric activity signals,

means for amplifying each of said myo-electric signals,

and means, during a predetermined time period, for separately and directly converting each amplified myo-electric signal into a representative binary signal the state of which is depndent upon the absence or presence of said myo-electric signal, said binary signals collectively forming a binary word code,

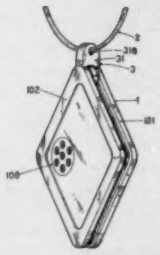
a plurality of lines corresponding on a one-to-one basis with and coupling from the converting means and forming a digital information bus,

and means coupling to the digital information bus for decoding the binary word code to provide a signal representative of the particular code presented on the digital information bus.

4,158,197
PENDANT WITH AN ALARM BUILT IN

Mitsuhiro Takagaki, 1-4-29, Taira-machi, Meguro-ku, Tokyo, Japan

Filed Oct. 21, 1977, Ser. No. 844,158
Int. Cl.[2] G08B *15/00*
U.S. Cl. 340—574 3 Claims



1. A pendant with an alarm built in, comprising a pendant body of hollow construction having an opening at its upper end; a buzzer and a battery installed within the hollow space of said pendant body; a pair of contact elements to constitute an electric circuit in association with said buzzer and said battery, one of said elements being resilient and tending to contact the other element and being provided with a convexity; an insulating insertion member provided with a concavity to accommodate said convexity of said one contact element, one end of which constitutes a connecting means to connect said pendant body to a chain, the insulating insertion member being designed to be inserted through said opening of said pendant body between said pair of contact elements and be held in the position by the cooperative engagement between said concavity of said insertion member and said convexity of said one resilient contact element.

4,158,198
APPARATUS FOR EVALUATION OF FITNESS OF A MOTOR VEHICLE OPERATOR TO PERFORMANCE OF A PREDETERMINED MOTOR ABILITY TEST

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

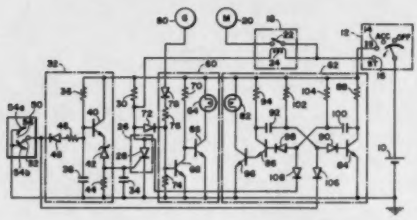
Filed Jul. 11, 1977, Ser. No. 814,440
Claims priority, application Japan, Jul. 9, 1976, 51-82327
Int. Cl.[2] B60K *28/00*
U.S. Cl. 340—576 11 Claims

1. Apparatus for evaluation of fitness of a motor vehicle

operator to perform a predetermined motor ability test, comprising:

a. sensing means for electrically sensing the exertion of an operating force within a predetermined range by said vehicle operator, said sensing means comprising:

a pressure switch of the type which turns on when the hydraulic pressure in a hydraulic pressure brake circuit is below a first predetermined hydraulic pressure; turns on when the same exceeds a second predetermined hydraulic pressure; and turns off when the same is between the first and the second predetermined hydraulic pressures;



b. a judging circuit connected to said sensing means, said circuit being adapted to produce a pass signal when said predetermined operating force has continued for a predetermined period, the result of said fitness test being judged satisfactory:

c. indicator means connected to said sensing means and judging circuit, which indicator effects display of a first indication when said sensor detects said predetermined operating force and a second indication when the latter has continued for said predetermined period; and

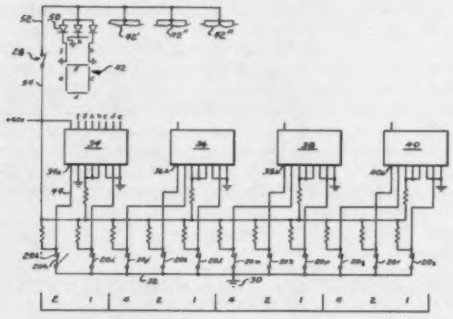
d. engine locking means connected to said judging circuit, said means being adapted to render the vehicle engine operative responsive to said pass signal.

4,158,199

DECODER FOR IDENTIFICATION OF BACTERIA

John W. Clark, R.R. 3, Box 326, Aurora, Ill. 60504

Filed Sep. 8, 1977, Ser. No. 831,432
Int. Cl.[2] G08B *5/36*
U.S. Cl. 340—711 **5 Claims**



1. A device involving manipulation of defined binary codes for determining data for the identification of bacteria, or the like, wherein manipulation of binary code data will provide a multiple digit octal number which, when used with a prepared guide, will give pre-determined identification of bacteria, the device comprising, in combination:

switch means to be manipulated between a first and second position to define a binary position;

integrated circuit elements associated with said switch means, respectively, and adapted to convert the binary input information to appropriate octal code within the circuit element; and

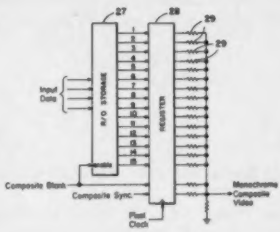
display means electrically connected to the output of the integrated circuit elements to display the manipulated octal information of the circuit elements to provide a code number display to the user, as desired.

4,158,200

DIGITAL VIDEO DISPLAY SYSTEM WITH A PLURALITY OF GRAY-SCALE LEVELS

Charles L. Seitz, San Luis Rey; Paul Grunewald, Leucadia; Marshall M. Parker, San Diego, and Irvin G. Stafford, Carlsbad, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 26, 1977, Ser. No. 836,746
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—750 **8 Claims**



1. A digital video display system comprising:

a video monitor for the display of information in the form of alpha-numeric characters and other symbols formed of individual picture elements;

a video synthesizer coupled to said video monitor, said video synthesizer including means to generate video signals selected from three or more different voltage levels to form video signals corresponding to different levels of luminance to be displayed by said video monitor for each of said picture elements;

a character generator coupled to said video synthesizer, said character generator including a character storage to store binary codes each corresponding to one of said different levels of luminance; and

buffer means coupled to said character generator, said buffer means including means to temporarily store a sequence of character codes representing different alpha-numeric characters to be displayed by said video monitor, said character codes being transferred to said character generator to select a sequence of binary codes for the different picture elements forming an alpha-numeric character.

4,158,201

FLAT ELECTRO OPTIC DISPLAY PANEL AND METHOD OF USING SAME

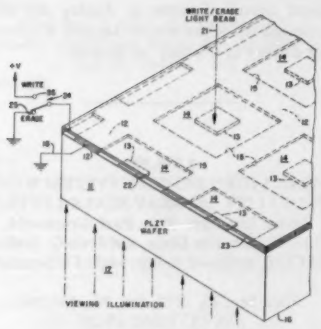
Michael R. Smith, Thousand Oaks, and Richard H. Burns, Glendale, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Oct. 18, 1977, Ser. No. 843,192
Int. Cl.[2] G06K *15/18*
U.S. Cl. 340—783 **25 Claims**

1. A flat electro-optical display panel comprising;

a flat, optically birefringent transverse electroptic plate having first and second parallel surfaces,

an electrically conductive coating having a plurality of openings therein on said first parallel surface, and



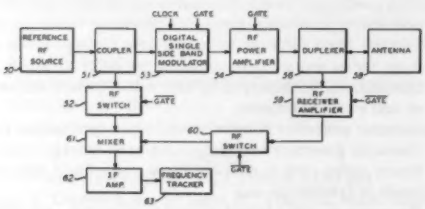
islands of electrically conductive material electrically isolated from said conductive coating and disposed on said first parallel surface within at least some of said openings.

4,158,202

RECEIVER BANDWIDTH CONSERVATION IN A DOPPLER RADAR

Theodore Hubka, Pleasantville, and Robert W. Slater, Bardonia, both of N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 25, 1977, Ser. No. 854,571
Int. Cl.[2] G01S *9/46*
U.S. Cl. 343—8 **4 Claims**



3. A single sense Doppler radar comprising:

a transmitter,

a receiver,

a common antenna connected to said transmitter and said receiver for transmission and reception of radar signals said antenna radiating a pair of forward beams and a pair of aft beams,

a source of rf signals having a constant frequency,

means in said transmitter and said receiver for digitally translating the frequency of said rf signals up during transmission of said aft beams and for digitally translating the frequency of said rf signals down during transmission of said forward beams,

a mixer in said receiver for mixing a portion of said rf signals with received signals, and

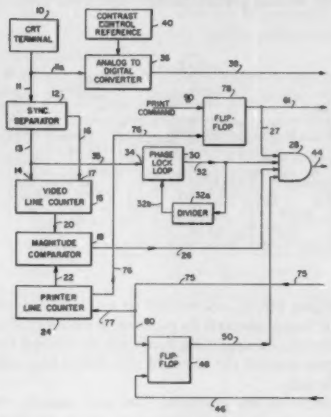
a phase shifter in said mixer for selecting the upper sideband of return signals of said aft beams and for selecting the lower sideband of return signals of said forward beams whereby the fore and aft Doppler shifted returns are translated into a single sense and the noise foldover resulting from the mixing process is eliminated in said receiver.

4,158,203

ARRANGEMENT FOR RECORDING IMAGES APPEARING ON A CATHODE RAY TUBE

Clark E. Johnson, Jr., Weston, Mass., and William F. Main, Coral Gables, Fla., assignors to Buckeye International, Inc., Columbus, Ohio

Filed Sep. 30, 1977, Ser. No. 838,131
Int. Cl.[2] G01D *9/00, 15/10*
U.S. Cl. 346—35 **12 Claims**



1. An arrangement for making a recording of an image displayed on a cathode ray tube for a selected substantially short duration of time, comprising line identifying means for identifying and recording sequentially a horizontal line of an image on said cathode ray tube to be recorded; dividing means connected to said line identifying means for dividing said horizontal line into a predetermined number of intervals; means for digitizing the amplitude of a video signal corresponding to said horizontal line within each of said intervals; storage means connected to said amplitude digitizing means and to said dividing means for storing digitized amplitudes within each interval; recording means connected to said storage means for recording within a predetermined time duration the digitized amplitudes transmitted from said storage means; said line identifying means comprises sync separator means for receiving said video signal and for generating horizontal sync pulses and vertical sync pulses, first counter means connected to said sync separator means and operable to be advanced by said horizontal sync pulses and to be reset by said vertical sync pulses, second counter means connected to said recording means and advanced by pulses from said recording means; and magnitude comparator means having inputs connected to said first counter means and said second counter means for comparing the contents of said first and second counter means, said magnitude comparator means having an output for controlling said storage means.

4,158,204

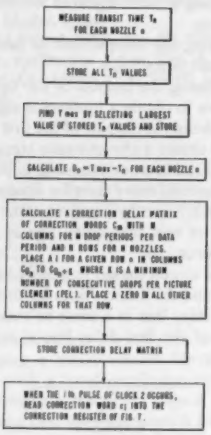
TIME CORRECTION SYSTEM FOR MULTI-NOZZLE INK JET PRINTER

Lawrence Kuhn, Ossining; Robert A. Myers, New York, and Roy L. Russo, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 756,044, Dec. 30, 1976, abandoned.
This application Apr. 24, 1978, Ser. No. 899,136
Int. Cl.[2] G01D *18/00*
U.S. Cl. 346—75 **11 Claims**

1. In a system employing a plurality of movable elements, means for measuring at selected times the transit time of each of said elements on an intermittent basis and providing measured transit time values therefor,

ordering means responsive to said measured transit time values for determining the relative order of said transit times of said elements and supplying a set of order signals representing said order, and


MEASURE TRANSIT TIME T_n FOR EACH NOZZLE n
STORE ALL T_n VALUES
FIND T max BY SELECTING LARGEST VALUE OF STORED T_n VALUES AND STORE
CALCULATE $D_n = T_{max} - T_n$ FOR EACH NOZZLE n
CALCULATE A CORRECTION DELAY PATRIX OF CORRECTION WORDS C_{nk} WITH M COLUMNS FOR M DROP PERIODS PER DATA PERIOD AND N ROWS FOR N NOZZLES. PLACE A 1 FOR A GIVEN ROW n IN COLUMNS C_{nk} TO $C_{n(k+x)}$ WHERE X IS A MINIMUM NUMBER OF CONSECUTIVE DROPS PER PICTURE ELEMENT (PEL). PLACE A ZERO IN ALL OTHER COLUMNS FOR THAT ROW
STORE CORRECTION DELAY MATRIX
WHEN THE i th PULSE OF CLOCK 2 OCCURS, READ CORRECTION WORD c_i INTO THE CORRECTION REGISTER OF FIG. 7.

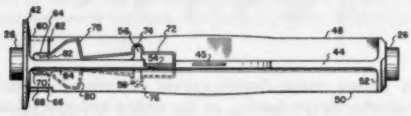
means for energizing said elements at times varying from element-to-element in an order selected under control of said order signals.

4,158,205

RECORD SPOOL HOLDER

Leonard E. Jenkins, Jr., Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 29, 1978, Ser. No. 891,080
Int. Cl.[2] G01D *15/28*
U.S. Cl. 346—136 **8 Claims**



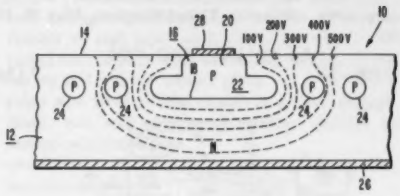
1. A recording apparatus comprising:
a recording station,
means for drawing a recording medium from a suply roll past said recording station,
means for mounting a supply roll of recording medium of either of two predetermined widths in said recording apparatus,
said means for mounting said supply roll including:
a spindle for holding said supply roll, said spindle having an elongated body member having an end shaft member at each end thereof, said body member including a plurality of ribs defining a substantially cruciform cross-section and extending axially of said spindle for a distance substantially equal to the width of the wider of the two rolls of recording media, said ribs terminating at one end in a collar extending radially outward to a dimension greater than the radial dimension of said ribs to define a first end stop for positioning said wider roll on said spindle, and a retractable second end stop member positioned a predetermined distance from said first end stop for positioning the narrower one of said two rolls of recording media; and
bracket means in said recording apparatus for removably receiving said end shaft members of said spindle.

4,158,206

SEMICONDUCTOR DEVICE

John M. S. Neilson, Mountaintop, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,181
Claims priority, application United Kingdom, Feb. 7, 1977, 04942/77
Int. Cl.[2] H01L *29/90*
U.S. Cl. 357—13 **7 Claims**



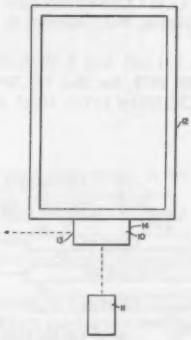
1. A semiconductor device comprising:
a body of semiconductor material having a surface and having a first type conductivity;
a first region having a second type conductivity within said body and comprising a first portion and a second portion contiguous with said first portion, said second portion being spaced apart from said surface by said first portion and said second portion having a greater lateral extent than said first portion, said first region forming a PN junction with the remainder of said body at the interface therebetween, said PN junction terminating at said surface, and
at least one second region having said second type conductivity within said body and spaced apart from said surface, said second region being spaced from and substantially completely extending around a portion of said first region.

4,158,207

IRON-DOPED INDIUM PHOSPHIDE SEMICONDUCTOR LASER

Stephen G. Bishop; Bruce D. McCombe, both of Alexandria, Va., and Wulf H. Koschel, Frieburg, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1978, Ser. No. 890,872
Int. Cl.[2] H01S *33/19*
U.S. Cl. 357—18 **20 Claims**



1. A light-emitting semiconductor device which provides a source of monochromatic, coherent light comprising:
a III-V compound semiconductor,
a transition metal dopant dispersed uniformly throughout said III-V compound semiconductor,

said transition metal dopant allowing excitation of said III-V compound semiconductor to achieve laser action at wavelengths much longer than those not including said metallic dopant.

4,158,208

AUTOMATIC SETUP SYSTEM FOR TELEVISION CAMERAS

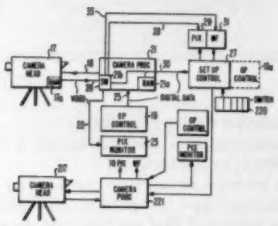
Robert A. Dischert, Burlington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,008

Claims priority, application United Kingdom, May 30, 1977, 22811/77

Int. Cl.[2] H04N *9/62, 9/04*

U.S. Cl. 358—10 **7 Claims**



1. An automatic setup unit for automatically adjusting a color television camera having a plurality of separate image pickup devices providing separate video output signals, when viewing a predetermined test pattern, said color television camera being of the type having a digital memory for storing in binary form at separate addresses separate setup control values for the camera and means for providing said control values to the camera control circuitry, said automatic unit comprising:

means adapted to be coupled to the separate video output signals from said camera for comparing one of said video signals from one of the image pickup devices of said camera to a reference signal for detecting errors;

means responsive to said detected errors for generating binary correction control signals; and

means connected to said camera and responsive to said correction control signal generating means for providing the binary correction signals and appropriate addresses to correct the memory to reduce the errors.

4,158,209

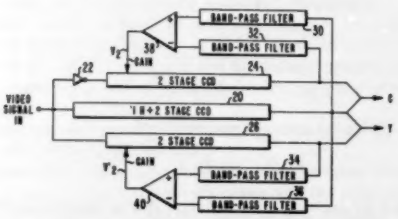
CCD COMB FILTERS

Peter A. Levine, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 821,100, Aug. 2, 1977. This application Jun. 29, 1978, Ser. No. 920,389

Int. Cl.[2] H04N *9/535;* **H01L** *29/78*

U.S. Cl. 358—31 **10 Claims**



1. A comb filter comprising, in combination:

a first charge-coupled device (CCD) delay line for imparting a delay equal to substantially one horizontal line time of a television receiver plus the delay inserted by N additional CCD stages, where N is a relatively small integer;

second and third CCD delay lines, each having N CCD stages, said three delay lines being operated at the same clock frequency;

means for applying a video signal to the first and second of said delay lines;

means for applying the complement of said video signal to the third of said delay lines;

means for combining the outputs of the first and second of said delay lines to obtain a luminance signal;

means for combining the outputs of the first and third of said delay lines to obtain a chrominance signal;

first feedback circuit means responsive to the outputs of said first and said second delay lines for controlling the gain of said second delay line in sense to make it substantially equal to that of said first delay line at a particular frequency of interest; and

second feedback circuit means responsive to the outputs of said first and said third delay lines for controlling the gain of said third delay line in a sense to make it substantially equal to that of the first delay line at said particular frequency of interest.

4,158,210

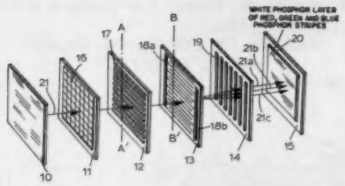
PICTURE IMAGE DISPLAY DEVICE

Masanori Watanabe, Katano; Kinzo Nonomura, Hirakata, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1977, Ser. No. 832,919

Int. Cl.[2] H04N *9/12, 5/66;* **H01J** *31/10, 31/20*

U.S. Cl. 358—56 **6 Claims**



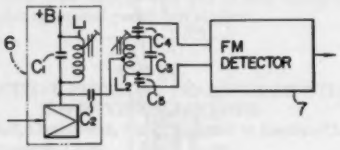
1. A picture image display system comprising: a picture image display device having, in the recited order, a substantially planar electron source, electrode means for taking out electrons from said electron source, electron beam control means for selectively controlling the passage of the electrons from said electrode means to form a plurality of lines of electron beams, deflecting means for deflecting the electron beams received from said electron beam control means, and display means for receiving the electron beams from said deflecting means and emitting light when struck by said electron beams; deflecting driving means connected to said deflecting means for applying to said deflecting means a stepped deflecting voltage at one of m levels, m being an integer ≥ 2, means for converting picture image signals for a single horizontal period into $m \times n$ picture image signals for a single horizontal period into $m \times n$ picture image signal groups, n being an integer ≥ 1, m memory means connected to said converting means for storing the respective sets of signals from among said signal groups which are represented by the expressions $(ml-m+1)$, $(ml-m+2)$ and ml, l being the integers 1,2 . . . n, and display driving means connected between said memory means and said electron beam control means for controlling said electron beam control means for passing to said display means the signals coming from the respective memory means in succession for each line, one group being displayed for each level of said deflection voltages.

4,158,211

AUTOMATIC FREQUENCY CONTROL APPARATUS FOR TELEVISION RECEIVER

Mitsuya Masuda; Keisuke Yamamoto, and Namio Yamaguchi, all of Ibaraki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 2, 1978, Ser. No. 874,532
Claims priority, application Japan, Feb. 3, 1977, 52/11374
Int. Cl.[2] H04N *5/50*; H03B *3/04*
U.S. Cl. 358—195 2 Claims



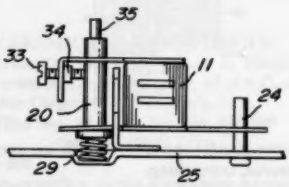
1. An automatic frequency control apparatus for a television receiver comprising a mixer circuit for mixing a received television signal with a local oscillation frequency signal to produce an intermediate frequency signal, a local oscillator circuit for applying said local oscillation frequency signal to said mixer circuit, a video intermediate frequency amplifier circuit for amplifying said intermediate frequency signal output of said mixer circuit, an FM detector for FM detecting the output of said video intermediate frequency amplifier circuit, a feedback loop for applying the output voltage of said FM detector having an S-characteristic to said local oscillator circuit to automatically control the oscillation frequency of said local oscillator circuit and a phase shifter for converting a change in the output frequency of said video intermediate frequency amplifier circuit into a change in phase and to apply the phase change to said FM detector, said phase shifter comprising a serial-parallel resonance circuit with one of the serial resonance frequency and the parallel resonance frequency thereof being selected at a frequency near a picture carrier frequency while the other being selected near a frequency equal to the picture carrier frequency less one half of a differential frequency between the picture carrier frequency and a sound carrier frequency.

4,158,212

MAGNETIC TAPE HEAD AZIMUTH ASSEMBLY

Donald J. Dattilo, Mt. Prospect, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1978, Ser. No. 891,574
Int. Cl.[2] G11B *21/08*
U.S. Cl. 360—109 8 Claims



1. A magnetic tape player having a chassis and a magnetic tape head which can be adjusted in vertical and azimuth positions with respect to the chassis, comprising:

a chassis;

a tape head azimuth assembly mounted with respect to said chassis, said azimuth assembly including,

a magnetic tape head having at least two opposed external sides,

first plate attached to one of said external sides of said tape head,

second plate attached to another of said external sides of said tape head,

said second plate being resiliently mounted with respect to said first plate,

an adjustable means attached to one of said plates for adjustable relative movement with respect thereto, the other of said plates having an extending portion, and

a hollow cylindrical member fixed to said extending portion and having a predetermined angular disposition with respect to said tape head, said adjustable means being biased into contact with an exterior surface of said member by said resilient second plate;

a guide post fixed to said chassis at a fixed angular disposition, and said cylindrical member slidably mounted around said guide post;

a cam follower attached to an extension of one of said first and second plates;

a multi-surfaced cam means for determining various vertical positions of said azimuth assembly with respect to said chassis; and

spring bias means urging said cam follower into contact with said multi-surfaced cam;

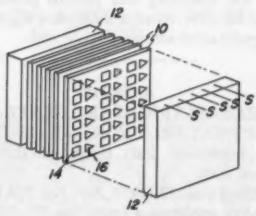
whereby movement of said adjustable means with respect to said one plate to which it is attached alters the angular disposition of said tape head with respect to said chassis, and said azimuth assembly is selectively positioned at various vertical positions with respect to said chassis by said spring bias means and said multi-surfaced cam means cooperating with said cam follower on said extension of one of said first and second plates.

4,158,213

MULTITRACK MAGNETIC HEADS

Neil J. Griffith, San Diego, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Jun. 19, 1978, Ser. No. 916,652
Int. Cl.[2] G11B *5/28, 5/20*
U.S. Cl. 360—121 13 Claims



1. Subassembly apparatus useful in the manufacture of a multitrack magnetic head comprising:

(a) a wafer of non-magnetic material having a grooved structure thereon,

(b) first conductive lead means disposed within said grooved structure,

(c) magnetic film means disposed within said grooved structure over said first conductive lead means, and

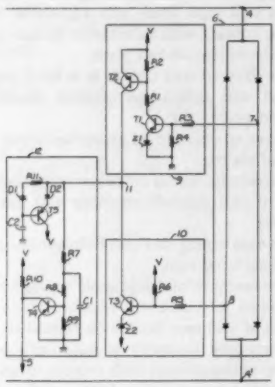
(d) second conductive lead means disposed within said grooved structure over said magnetic film means and extending about said film means to contact said first conductive lead means,

the combined thickness of said magnetic film means and said first and second conductive lead means being not greater than the depth of said grooved structure.

4,158,214
PROTECTIVE DEVICE FOR AN ELECTRONIC JUNCTOR

Daniel M. A. F. Bolus, Jouars-Ponchartrain; Jean-Pierre Chevillon, Plaisir; Jean-Charles Comte, Jouy-en-Josas, and Pierre D. P. Philippe, Clamart, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 10, 1978, Ser. No. 868,564
Claims priority, application France, Nov. 1, 1977, 77 00542
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—91 4 Claims



1. Apparatus for protecting a telephone junctor circuit energized by a junctor power supply from excessive alternating-current and direct-current voltages comprising:

a bridge rectifier connected to said junctor circuit and having first and second output terminals;

a first threshold detector connected to said first output terminal;

a second threshold detector connected to said second output terminal;

a temporization circuit having an input terminal and an output terminal;

first means for connecting said first and second threshold detectors to said temporization circuit input terminal; and

second means connected to said temporization circuit output terminal for inhibiting said junctor power supply in response to an over-voltage indication signal generated by said temporization circuit.

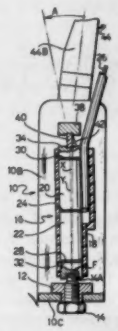
4,158,215
PIEZOELECTRIC SPARK GENERATOR, PARTICULARLY FOR GAS IGNITERS

Lisio Piozner, Pordenone, Italy, assignor to B.P.T. S.p.A., Cinto Caomaggiore, Italy

Filed Jun. 13, 1978, Ser. No. 915,100
Claims priority, application Italy, Jun. 27, 1977, 53285/77[U]
Int. Cl.[2] F23Q *3/00*
U.S. Cl. 361—260 4 Claims

1. In a piezoelectric spark generator comprising: a U-shaped frame pressed of sheet steel, with elongate flat branches parallel to one another; a pressure screw carried by the bottom of the frame; an elongate piezoelectric cartridge, resting with one end against the tip of the screw and extending between the branches of the frame towards the open end of this latter; a fixed reaction block bridging across the branches of the frame in proximity to the said open end; a movable block forming the free end of the cartridge facing towards the fixed block; a rolling cam formed by a bar which passes freely through openings in the two branches and is compressed between the said blocks transversely with respect to its length under the action of the said pressure screw; and an actuating lever including two branches rigidly connected with the respective ends of the said bar projecting from the said openings; and in which moreover the said bar is prismatic, with quadrangular cross-section, arranged to perform an angular movement on one its longitudinal edge resting against the fixed block on actuation of the lever, the improvements comprising:

the said prismatic bar of rectangular cross-section, the large side of which amounts to 0.08–0.15 times the effective length of the cartridge and in which the angle of inclination of the diagonal to the large sides exceeds by 3°–6° the angular stroke of the actuating lever; the movable block

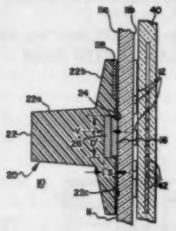


and the fixed block have each a flat-bottomed groove with diverging flanks in which rests the respective small longitudinal face of the bar, the width of the bottom of the groove being substantially equal to the small side of the said rectangular cross-section whereby the bar is prevented from displacement in the groove transversely of the latter; a portion of the edge of each of the openings in the branches of the frame through which the bar passes is shaped to constitute at the actuating stroke an end stop acting directly on the pectoral large face of the bar.

4,158,216
CAPACITIVE TOUCH CONTROL

John E. Bigelow, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,368
Int. Cl.[2] H01G *5/04*
U.S. Cl. 361—280 9 Claims



1. A capacitive touch control for fabrication upon a panel of insulative material, comprising:

a multiplicity of electrodes fabricated upon a first surface of said panel, said multiplicity of electrodes being electrically isolated from one another and arranged at substantially equal distances from a common center forming a central axis of said control;

a disk fastened to a second surface, opposite said first surface, of said panel, said disk having its axis of rotation substantially aligned with said central axis;

a control knob having a rear surface, said surface having a recess formed centrally therein;

a member fastened to said control knob at the bottom of said recess; and

a sheet electrode fastened to said control knob rear surface;

said disk and said member being fabricated of magnetically attractive materials, said control knob being held adjacent to said panel first surface by the magnetic attraction between said disk and said member when said disk is positioned within said recess;

said control knob being rotatable about said central axis to rotate said sheet electrode in the plane of and adjacent to said panel second surface to cause a variation in the capacitance associated with at least one of said multiplicity of electrodes upon said panel first surface.

4,158,217

CAPACITIVE PRESSURE TRANSDUCER WITH IMPROVED ELECTRODE

Robert L. Bell, Chatsworth, Calif., assignor to Kaylico Corporation, Chatsworth, Calif.

Filed Dec. 2, 1976, Ser. No. 746,853
Int. Cl.² H01G 5/16
U.S. Cl. 361—283 **13 Claims**

9. A capacitive pressure transducer comprising:

a pair of members each carrying an electrode thereon, which electrodes are in an opposed relationship to one another, at least one of said members being subject to deflection to and from said other member upon the application of pressure thereto, said electrode bearing members being in spaced relationship so that the deflection of one member with respect to the other member results in a change in the spacing of one electrode with respect to the other electrode;

at least one of said electrodes comprising:

a central electrically conductive area; and

a plurality of electrically non-conductive areas provided in said central conductive area, said non-conductive areas being arranged and configured to create a capacitive fringe effect to substantially minimize the non-linear component of the variation of capacitance and impedance of said capacitive pressure transducer as a function of pressure.

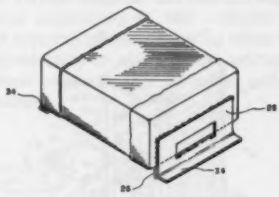
4,158,218

CERAMIC CAPACITOR DEVICE

Eugene D. McLaurin, Mauldin; William E. Hucks, Simpsonville, and Gordon R. Love, Greenville, all of S.C., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,300
Int. Cl.² H01G 1/14
U.S. Cl. 361—308 **4 Claims**

1. A ceramic capacitor device comprising a ceramic chip of substantially rectangular cross-section having substantially rectangular parallel opposed end surfaces each end surface having a fired-on metallizing composition; a metal foil terminal strip metallurgically bonded to each end surface solely by said fired-on metallizing composition having a metal constituent consisting essentially of at least 80% Ag and up to 20% noble metal and said metal foil terminal strips having a composition consisting essentially of at least 80% Ag and about 2 to 20% noble metal, each metal foil terminal strip having an integral first portion in close surface to surface contact and metallurgically bonded to a respective end surface of said ceramic chip solely by said fired-on metallizing composition, an integral end portion remote from said ceramic chip and bent at substantially 90° with respect to said first portion, and an integral elastically deformable intermediate portion of predetermined length between said first portion and said end portion extending from said ceramic chip to said end portion and characterized by substantial elastic deformability with respect to forces acting at



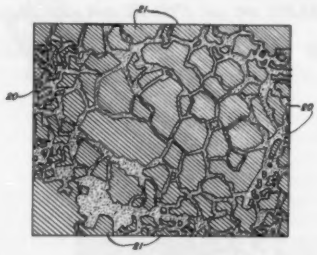
said end portions, said predetermined length being sufficient to permit elastic deformation of said intermediate portion during an ambient temperature excursion of 400° C. with each said end portion fixed in surface-to-surface contact to a substrate having a TCE which is in the range of ±100% of the TCE of the ceramic chip, said elastic deformation being sufficient to relieve damaging stress on the end surfaces of said ceramic chip.

4,158,219

HETEROPHASIC CERAMIC CAPACITOR

David A. Payne, Champaign, Ill., and Sang M. Park, Newhall, Calif., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Nov. 1, 1977, Ser. No. 847,588
Int. Cl.² H01G 4/12
U.S. Cl. 361—321 **9 Claims**



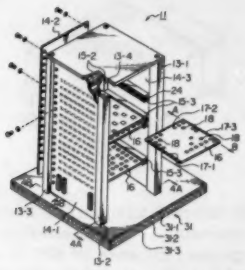
1. A high dielectric constant ceramic capacitor comprising a heterophasic dielectric ceramic body and electrode metal, said heterophasic ceramic body consisting essentially of a major amount of $BaTiO_3$ and from 1-33 volume percent of $Pb_5Ge_3O_{11}$, which mixture matures by liquid phase sintering at a temperature within the range of about 750°-1050° C. and consolidates to yield said heterophasic structure in which a continuous intergranular $Pb_5Ge_3O_{11}$ derived phase separates the major $BaTiO_3$ phase into discrete localized volumes.

4,158,220

PRINTED CIRCUIT CARD CONSTRUCTION

Haruhiko Yamamoto, Yokohama; Yoshiaki Udagawa, Tokyo, and Yoshinao Hirose, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 20, 1977, Ser. No. 862,498
Claims priority, application Japan, Dec. 29, 1976, 51-160306
Int. Cl.[2] H02B *1/02*
U.S. Cl. 361—415 19 Claims



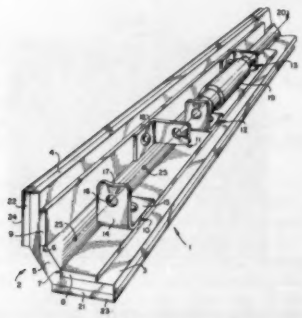
1. A printed circuit card construction comprising a base having a plurality of conductor plates laminated together and at least one printed circuit card stack mounted on said base, said at least one card stack comprising: a plurality of poles selectively electrically connected to said conductor plates; at least one mother board, each said mother board being supported by two adjacent ones of said poles; a plurality of Input-/Output connectors fixed on each said mother board; and a plurality of cards held at their peripheries by corresponding ones of said Input/Ouput connectors; said poles comprising both mechanical means for supporting each said mother board and electrical means for supplying electrical power to each said mother board.

4,158,221

LIGHT FIXTURE

Youri Agabekov, 54 bis quai Gustave Ador, Geneva, Switzerland (1207)

Filed Mar. 22, 1977, Ser. No. 780,052
Claims priority, application Switzerland, Mar. 22, 1976, 3514/76
Int. Cl.[2] H05B *33/02;* F21S *1/02*
U.S. Cl. 362—219 7 Claims



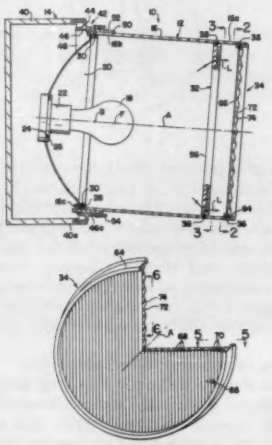
1. A fixture for a plurality of tubular electric lamps, said fixture comprising an elongated frame of generally L-shaped cross section formed of insulating material and comprising a pair of longitudinally extending flanges substantially at right angles to each other, a pair of electrically conductive flat metal bars, one such bar extending longitudinally on and lying flat against the inner wall of each flange of the frame, a plurality of pairs of lamp supporting brackets carried by said bars in positions longitudinally spaced therealong, each pair of brackets comprising one bracket attached to one of said bars and another bracket attached to the other of said bars, each of said brackets having a lamp supporting arm cooperating with the lamp supporting arm of the other bracket of the pair, each lamp supporting arm projecting from the bar to which it is attached to a position beside but spaced from the other bar, a lamp supporting portion carried by each of said arms, the lamp supporting portions of each pair of brackets being adapted to support a tubular lamp in a position substantially parallel to and overlying but spaced from both bars with the axis of the lamp lying substantially on the line of juncture of two projected longitudinal planes, one of which planes also includes the longitudinal centerline of one of the bars and the other of which planes also includes the longitudinal centerline of the other bar.

4,158,222

LIMITED VISIBILITY SIGNAL DEVICE

Richard D. Cook, Williamson, Tex., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,534
Int. Cl.[2] F21Q *3/00;* B60Q *1/00;* F21V *5/08, 13/04;* F21M *1/00*
U.S. Cl. 362—269 22 Claims



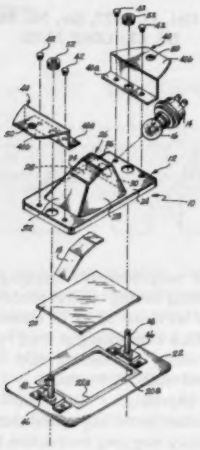
1. A signal device comprising a housing having outer and inner ends, a light source supported in said housing spaced from said outer end, light directing lens means supported on said outer end of said housing, and light collimating means supported in said housing between said light source and said lens means, said lens means having inner and outer sides with respect to said housing and an axis transverse to said inner and outer sides, first lenticular elements on one of said sides of said lens means and including light directing surfaces, said lens means having an orientation in which said axis is horizontal and said light directing surfaces of said first lenticular elements direct light from said collimating means axially outwardly in vertical planes parallel to one another and to said lens axis and including a light blocking plane horizontally spaced from said axis in one direction, said light directing surfaces of said first lenticular elements in said orientation of said lens means further directing light from said collimating means horizontally away from said blocking plane, and second lenticular elements on the other of said sides of said lens means, said second lenticular elements in said orientation of said lens means having light directing surfaces directing light from said collimating means upwardly and downwardly in said vertical planes and horizontally away from said blocking plane.

4,158,223

LOW LEVEL DIFFUSING REFLECTOR ASSEMBLY

Donald P. Walley, Seattle, and Buddy J. Hitchcock, Federal Way, both of Wash., assignors to Heath Tecna Corporation, Kent, Wash.

Filed Sep. 16, 1977, Ser. No. 834,069
Int. Cl.[2] F21V 7/00
U.S. Cl. 362—297 21 Claims



1. In a reflector assembly for low level diffuse illumination includng:

(a) a reflector housing defining a concavely shaped recess having a side wall and a bottom wall adjoining said side wall, said recess having an opening through which light can emanate, said recess having a semireflective, glossy white surface,

(b) bulb socket means for positioning an incandescent bulb in said recess so as to locate the filament of said bulb wholly within said recess and spaced from said side wall and said bottom wall,

the improvement comprising

(c) a highly reflective strip located adjacent said bottom wall, said strip being positioned so that the filament of said bulb is located between said strip and said opening, said strip extending from a location behind said filament to a location adjacent said opening, said strip being wider than the filament of said bulb and narrower than said opening, said strip in combination with said reflector housing operating to cause light emanated from said reflector assembly to diffusely and substantially uniformly illuminate a predetermined area spaced from said reflector assembly.

4,158,224

INVERTER APPARATUS

Lawrence Kreyer, and Thomas G. Matherly, both of Santa Barbara, Calif., assignors to Unilog Systems Corporation, Los Angeles, Calif.

Filed Nov. 21, 1977, Ser. No. 853,076
Int. Cl.[2] H02M 1/18
U.S. Cl. 363—56 25 Claims

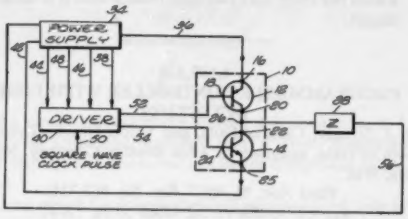
1. An apparatus having at least one inverter for converting a d.c. voltage to an alternating voltage for application across a load having an input and return referenced to said d.c. voltage, comprising:

a first pnp type transistor having emitter, collector and base terminals;

a second npn type transistor having emitter, collector and base terminals, said first transistor collector terminal being connected to said second transistor collector terminal and said load input being connected to said collector connection point;

a d.c. power supply having an upper voltage output and a lower voltage output, said upper voltage output connected to said first transistor emitter and said lower voltage output connected to said second transistor emitter, said load return being referenced to a voltage potential not more than or less than said upper and lower voltage outputs, respectively;

means for alternately applying said upper voltage output and said lower voltage output at said first and second transistor emitters respectively to said collector connection point, said applying means comprising means for controlling the conduction of said first and second transistors through their respective base terminals, said controlling means including:



means for applying to said first transistor base terminal a blocking voltage equal to said upper voltage output and an unblocking voltage which is a predetermined voltage differential below said upper voltage output, said blocking and unblocking voltages causing said first transistor to not conduct and conduct, respectively, and

means for applying to said second transistor base terminal a blocking voltage equal to said lower voltage output and an unblocking voltage which is a predetermined voltage differential above said lower voltage output, said blocking and unblocking voltages causing said second transistor to not conduct and conduct, respectively; and

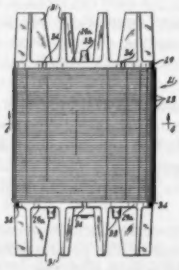
means for preventing a simultaneous conduction of said first and second transistors.

4,158,225

ROTARY DYNAMOELECTRIC MACHINE HAVING HIGH-RESISTANCE ROTOR

Claude M. Hertz, Taylorville, Ill., assignor to Ronk Electrical Industries, Inc., Nokomis, Ill.

Continuation of Ser. No. 606,588, Aug. 21, 1975, abandoned.
This application Feb. 28, 1977, Ser. No. 772,523
Int. Cl.[2] H02M 5/00
U.S. Cl. 363—150 16 Claims



1. A rotary dynamoelectric machine comprising:

a generally annular polyphase stator having a predetermined

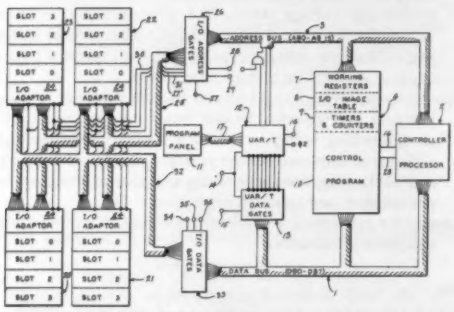
number of wound poles adapted to be interconnected to an a.c. power source; and

an induction rotor including a cylindrical laminated ferromagnetic core positioned within said stator for rotation about a longitudinal central axis thereof when said stator is energized by the power source, said rotor having a plurality of electrically conductive bars each extending the length of the core adjacent the cylindrical surface thereof, and conductive end rings at the ends of said rotor electrically connected to the ends of said bars at the respective ends of the core, at least one of said end rings having a plurality of radial slots therethrough thereby forming a plurality of spaced arcuate ring segments whereby the resistance of said rotor is substantially increased, the number of said radial slots being an odd number which is other than a multiple or submultiple of the predetermined number of stator poles thereby to avoid dead-spot positions at which the rotor may stop and from which it is difficult to restart.

4,158,226
PROGRAMMABLE CONTROLLER WITH LIMIT DETECTION

Odo J. Struger, Chagrin Falls, and Valdis Grants, Lyndhurst, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 21, 1977, Ser. No. 853,721
Int. Cl.[2] G05B *11/32*; G06F *9/06, 15/46*
U.S. Cl. 364—104 **10 Claims**



1. In a programmable controller having a processor which repeatedly executes instructions in a stored control program to examine the status of input devices connected thereto and couple their status to a logic unit and to operate output devices connected thereto in accordance with the condition of the logic unit, the improvement therein comprising:

an input module coupled to said processor for interfacing said processor with a transducer that generates a multi-bit number;

first storage means coupled to said processor and having locations for storing a preselected multi-bit upper limit number, and for storing a preselected multi-bit lower limit number;

second storage means in said processor for storing a present position number;

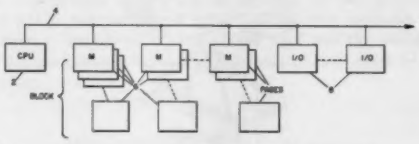
means coupled to said input module and said second storage means for inputting the multi-bit number generated by said transducer to said present position number storage location; and

in which said processor includes means for comparing the arithmetic value of the present position number in said second storage means with the arithmetic values of the upper and lower limit numbers in said first storage means, said comparing means being operable to set said logic unit to a false condition if the present position nunber is less than the lower limit number or greater than the upper limit number.

4,158,227
PAGED MEMORY MAPPING WITH ELIMINATION OF RECURRENT DECODING

William D. Baxter, Seymour, and Robert L. Metz, Nichols, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 12, 1977, Ser. No. 841,277
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 **12 Claims**



1. Apparatus for programmably mapping a paged memory of a computing system having central processing means, plural memory means, at least one block of memory, at least one of said at least one block comprising at least two of said memory means, and bus means connecting said central processing means to said plural memory means,

the apparatus comprising:

(a) first logic means providing a first output signal responsive to a memory mapping instruction for selecting a first of said at least two of said memory means in a first of said at least one block of memory, and including means

for defining a first logic state wherein said first memory means is selected when a location in said first block of memory is addressed, and

(b) second logic means connected to said first memory means and responding to said logic means for maintaining said first logic state until a different program instruction selects a second of said at least two of said memory means, and

for providing access to the first of said at least two memory means of said first block free of a requirement for address decoding among said at least two memory means whenever said first block is addressed during maintenance of said first state.

4,158,228
PROGRAMMABLE CALCULATOR INCLUDING ALPHANUMERIC ERROR DISPLAY MEANS

Emil E. Olander, Jr., Fort Collins; Rex L. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Jun. 1, 1977, Ser. No. 802,301
Int. Cl.[2] G06F *11/00*
U.S. Cl. 364—200 **9 Claims**

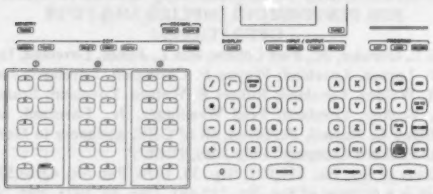
1. An electronic calculator comprising:

keyboard input means, including a plurality of alphabetic and numeric keys, for entering alphameric information, including lines of one or more alphameric statements each, into the calculator;

memory means, coupled to said keyboard input means, for storing each line of one or more alphameric statements as it is being entered into the calculator from said keyboard input means and for storing a program comprising a plurality of lines of one or more alphameric statements each entered into the calculator;

processing means, coupled to said keyboard input means and memory means, for processing lines of one or more alphameric statements each entered into the calculator to perform selected functions; and

display means, coupled to said processing means, for providing a visual indication of each line of one or more alphameric statements as it is being entered into the calculator and of the results of selected functions processed by said processing means;



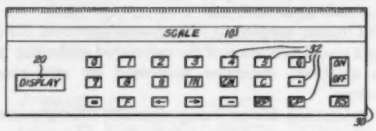
said processing means being operative, during entry of a line of one or more alphameric statements as it is being entered into the calculator, for detecting syntax errors in that line as such errors occur, said processing means being further operative, following detection of a syntax error during entry of a line of one or more alphameric statements for causing said display means to visually display an alphameric message indicative of the detected syntax error.

4,158,229

ELECTRONIC RULE FOR PRECISE DISTANCE MEASUREMENT AND DISTANCE SETTING

John Woo, Jr., 112 Teakwood Dr., Huntsville, Ala. 35801, and Yeong-Chung E. Lien, 3036 Yellowstone Dr., Lawrence, Kans. 66044

Filed Jun. 24, 1977, Ser. No. 809,772
Int. Cl.[2] G01C *3/00*; G01B *11/02*
U.S. Cl. 364—562 **28 Claims**



13. Distance setting apparatus for delineating a selected distance comprising:

(a) operator input menas for selecting the distance;

(b) optically active scale means having a plurality of optically active elements for delineating the selected distance;

(c) numerical display means for displaying a numerical representation of the selected distance; and

(d) control means responsive to said input means for activating at least one element of said scale means, and for causing said display means to display a numerical representation of a distance delineated along said scale means using the activated elements thereof;

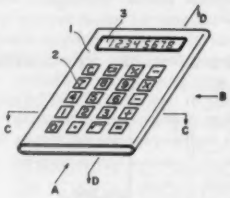
whereby an operator selects a distance for display by said apparatus, enters the selected distance by said input means, and said control means, responsive to said input means, causes the selected distance to be delineated on said scale and displayed numerically on said display.

4,158,230

ELECTRONIC CALCULATOR WITH NO PROTRUDING KEY TOPS

Isamu Washizuka, Soraku; Shintaro Hashimoto, Shiki; Sadakatsu Hashimoto, and Shigeki Komaki, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 17, 1977, Ser. No. 843,047
Claims priority, application Japan, Oct. 15, 1976, 51-124324
Int. Cl.[2] G06F *15/02*; H01H *9/00*
U.S. Cl. 364—708 **26 Claims**



1. An electronic calculator having a keyboard, with keys thereon, an arithmetic processor unit, a power supply and a digital display; said electronic calculator comprising in combination:

a casing means for accommodating said keyboard, said arithmetic processor unit, said power supply and said digital display;

wherein said casing corresponding to said keyboard comprises a single flexible flat sheet;

wherein a plurality of limited regions of said flat sheet are identified by unique symbols or indicators corresponding to respective ones of said keys of said keyboard, whereby said flexible flat sheet further comprises manually operable flat top key tops or key switch actuators;

a plurality of pairs of key contacts adjacent to respective ones of said manually operable flat top key switch actuators in the provision of a like plurality of key switches;

means responsive to actuation of said key switches for generating a key switch output signal;

means responsive to said key switch output signal, for generating a power control signal;

means responsive to said power control signal, for supplying power to said processor unit;

means responsive to the absence of key switch actuation, for nullifying said power control signal; and

means responsive to the absence of a power control signal for shutting off said supply of power to said processor unit.

4,158,231

PROGRAMMABLE CALCULATOR INCLUDING PROGRAM LISTING MEANS

Emil E. Olander, Jr , Fort Collins; Rex L. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Jun. 1, 1977, Ser. No. 802,302
Int. Cl.[2] G06F *13/12*
U.S. Cl. 364—710 **4 Claims**

1. An electronic calculator comprising:

keyboard input means including a plurality of alphabetic and numeric keys for entering lines of one or more alphameric statements each into the calculator;

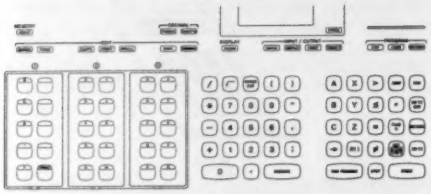
memory means, coupled to said keyboard input means, for storing a program of lines of one or more alphameric

statements each entered into the calculator, every stored line being associated with a separate line number;

processing means, coupled to said keyboard input means and memory means, for processing lines of alphameric information entered into the calculator to perform selected functions; and

printer means, coupled to said processing means, for printing lines of alphameric information;

said keyboard input means including a first control means for designating a particular line of one or more alphameric statements stored in said memory means, second control means for designating a list mode of calculator operation,



and an execute control key for initiating processing by said processing means of a line of one or more alphameric statements;

said processing means being responsive to actuation of said first control means, followed by actuation of one or more numeric keys representing the line number of a designated line of one or more alphameric statements stored in said memory means, followed by actuation of said execute control key, followed by actuation of said second control means, for causing said printer means to sequentially print the designated line of one or more alphameric statements stored in said memory means and every other stored line having a line number greater than the designated line.

4,158,232

ADAPTIVE CORRECTOR

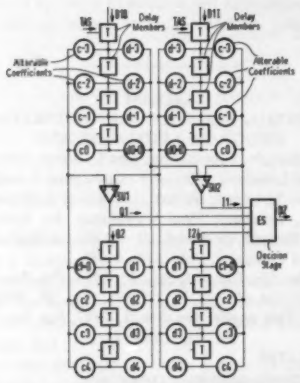
Helmut Koeth, Münich, and Gero Schollmeier, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Münich, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,518

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703622

Int. Cl.[2] G06F *15/34;* H04B *1/10*

U.S. Cl. 364—724 **5 Claims**



1. An adaptive corrector for the correction of data signals formed as a primary value and a plurality of prior and subsequent oscillations, comprising: a plurality of delay means for delaying the data signals; means for multiplying the data signals by coefficients at outputs of the delay means; at least one adder means for summing up the multiplied data signals; means for setting a first coefficient corresponding to said primary value of the data signals and for setting a second coefficient corresponding to a first subsequent oscillation of the data signal, and said means for setting providing a constant value for at least one of said first and second coefficients; and means for altering all remaining coefficients.

4,158,233

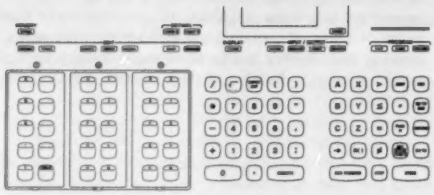
PROGRAMMABLE CALCULATOR INCLUDING MEANS FOR PERFORMING IMPLIED MULTIPLY OPERATIONS

Emil E. Olander, Jr., Fort Collins; Rex L. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Jun. 1, 1977, Ser. No. 802,304

Int. Cl.[2] G06F *7/39*

U.S. Cl. 364—754 **3 Claims**



1. An electronic calculator comprising:

keyboard input means including a plurality of alphabetic, numeric, and arithmetic operator keys for entering an algebraic statement that includes arithmetic operators, constants, and variables into the calculator;

memory means, coupled to said keyboard input means, for storing an algebraic statement that has been entered into the calculator;

processing means, coupled to said keyboard input means and memory means, for processing an algebraic statement that has been entered into the calculator and stored in said memory means to calculate the arithmetic result of that algebraic statement; and

output means, coupled to said processing means, for providing a visual indication of the calculated arithmetic result of an algebraic statement processed by said processing means;

said processing means being operative for processing an algebraic statement that includes first and second variables that are not separated by any arithmetic operator as if said first and second variables had been separated by a multiplication operator.

4,158,234

AUTOCORRELATION FUNCTION PARAMETER DETERMINATION

Pierre-André Grandchamp, Münchenstein, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 9, 1976, Ser. No. 749,202

Claims priority, application Switzerland, Dec. 12, 1975, 16146/75; Sep. 23, 1976, 12075/76

Int. Cl.[2] G06G *7/48;* G01N *15/02*

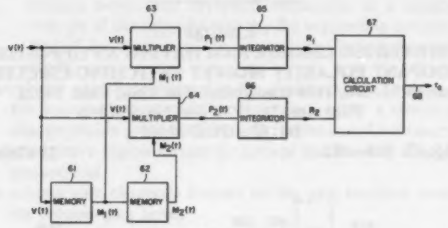
U.S. Cl. 364—834 **3 Claims**

1. An electronic circuit for processing an electrical input signal V(t)) variable with time and whose autocorrelation function $\psi(\tau)$ defined by

$$\psi(\tau) = \lim_{\Delta t \to \infty} \frac{1}{\Delta t} \int_{t_o}^{t_o + \Delta t} V(t)\, V(t + \tau)\, dt$$

has a known shape, to derive an output signal corresponding to a parameter of the autocorrelation function, comprising: means for deriving a first auxiliary signal corresponding to a first double integral R_1 having the general form

$$R_1 = \frac{1}{\Delta t} \int_{t_o}^{t_o + \Delta t} \int_{\tau_a}^{\tau_b} V(t)\, V(t + \tau)\, dt\, d\tau$$



and a second auxiliary signal corresponding to a second double integral R_2 having the general form

$$R_2 = \frac{1}{\Delta t} \int_{t_o}^{t_o + \Delta t} \int_{\tau_c}^{\tau_d} V(t)\, V(t + \tau)\, dt\, d\tau$$

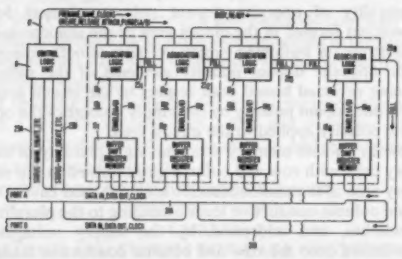
where the values of τ_a, τ_b, τ_c, τ_d define integration ranges in the delay-time τ region and where $\Delta\tau$ represents an integration range with respect to time from an initial instant to, and means for combining the first and second auxiliary signals to derive the output signal.

4,158,235

MULTI PORT TIME-SHARED ASSOCIATIVE BUFFER STORAGE POOL

Duane B. Call, Provo, Utah, and Larry K. Hopkins, Carlsbad, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 18, 1977, Ser. No. 788,556
Int. Cl.[2] G06F *13/00, 9/20*
U.S. Cl. 364—900 **12 Claims**



1. A time-shared modular digital storage system for access and use by a plurality of independently functioning data ports supplying digital information comprising:

a plurality of linearly interconnected memory cells for storing digital information, each memory cell having a name associated therewith when digital information is stored therein, each memory cell having associative addressing logic means for identifying the name associated with that particular memory cell; and

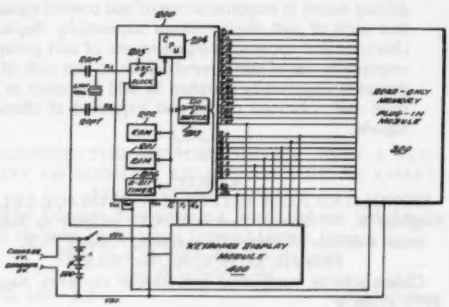
control means cooperating with said data ports and said plurality of memory cells for accepting requests for access to memory cells from any of said data ports individually, each said request including a name and operational commands supplied by the requesting port, said control means further cooperating with the data ports and the memory cells for allocating access to a memory cell by a requesting data port when the supplied name matches the name associated with the memory cell; each said memory cell including name comparator means accepting supplied names from the control means for associatively detecting a match between a supplied name and the name associated with any of the memory cells, said name comparator means further including means assigning the supplied name to a memory cell in response to said operational requests when the supplied name fails to match the name associated with any of the memory cells.

4,158,236

ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

Michael Levy, Pembroke Pines, Fla., assignor to Lexicon Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 723,049, Sep. 13, 1976, abandoned. This application Nov. 3, 1977, Ser. No. 848,527
Int. Cl.[2] G06F *15/02, 15/38*
U.S. Cl. 364—900 **15 Claims**



1. An information storage and retrieval apparatus comprising:

a hand-held housing including a main frame and a plug-in module removably connected to said main frame;

a plurality of display means disposed on said main frame for each displaying an alpha-numeric character;

means within said housing for driving each of said display means;

a keyboard on said main frame and having a plurality of keys divided into groups of keys, each key being associated with an alpha-numeric character or command for entering, in response to manual operation thereof, a sequence of alpha-numeric characters and commands, and producing command signals and sequences of character signals, each character signal identifying a character;

a read/write memory within said housing and connected to each of said display driving means for storing at least each character being currently displayed;

a central processor within said housing connected to said read/write memory, to said display driving means and to said keys for producing control signals to cause searching of said keyboard to locate manually operated keys and cause storage and display of entered and stored characters;

at least a first read/only memory (ROM) within said plug-in module and connected to said central processor for stor-

ing a plurality of pairs of sequences of alpha-numeric characters,

said processor including means for searching said first ROM to compare, one pair after another, one sequence of each pair with a sequence entered into said keyboard following entry of a first given command produced by manual operation of a key on said keyboard until a match is made, and for causing, subsequent to a match, the matching pairs of sequences to be displayed with said one sequence preceding the other sequence in said matching pairs, the character in each said display means varying in time without any manual operation of said keyboard so that the number of characters in said matching pairs can exceed the number of said display means, said searching and causing means searching, upon a second given command, to compare said other sequence of each pair with said entered sequence following entry of said first command until a match is made and causing said matching pairs of sequences to be displayed with said other sequences preceding said one sequence;

a second read/only memory (ROM) within said housing and connected to said read/write memory and said processor for storing instructions for searching said first ROM and causing said pair of sequences to be displayed, instructions for storing in said read/write memory, and instructions for searching of said keyboard; and

logic means connecting said keyboard and said driving means to said processor for receiving control signals from said processor each identifying a character to be displayed in a given display means and a group of keys to be searched and for sequentially applying a signal to said driving means in response to one of said control signals so that each of said display means sequentially displays a character and applying a signal to one of said groups in response to one of said control signals so that each of said groups is sequentially searched by said processor to produce said command signals and sequences of character signals.

4,158,237

MONOLITHICALLY INTEGRATED STORAGE CELLS

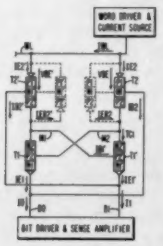
Siegfried K. Wiedmann, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,116

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738678

Int. Cl.² G11C *11/40*

U.S. Cl. 365—154 **8 Claims**



1. A monolithically integrated storage matrix having a storage cell comprising:

a flip-flop circuit including first and second cross-coupled bipolar, inverting transistors each having emitter, base and collector electrodes and first and second injectors each having first and second terminals, the first terminal of said first injector being connected to the base electrode of said first inverting transistor and to the collector electrode of said second inverting transistor and the first terminal of said second injector being connected to the base electrode of said second inverting transistor and to the collector electrode of said first inverting transistor,

control means including a word line connected to the second terminal of said first and second injectors and first and second bit lines, said first bit line being connected to the emitter electrode of said first inverting transistor and said second bit line being connected to the emitter electrode of said second inverting transistor, and

a substrate having first and second isolation pockets,

said first injector and said first inverting transistor being disposed in said first pocket and said second injector and said second inverting transistor being disposed in said second pocket,

whereby said first and second injectors form load elements for said second and first inverting transistors, respectively.

4,158,238

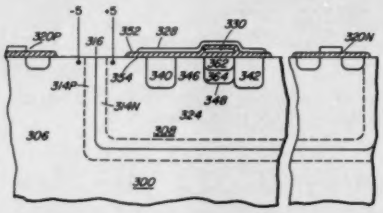
STRATIFIED CHARGE RAM HAVING AN OPPOSITE DOPANT POLARITY MOSFET SWITCHING CIRCUIT

Darrell M. Erb, 1100 Runnymead, Los Altos, Calif. 94022

Filed Apr. 21, 1978, Ser. No. 898,910

Int. Cl.² G11C *11/40*

U.S. Cl. 365—182 **23 Claims**



1. A random access memory addressed and energized into a write mode and a storage mode and a read mode by a plurality of supply voltages including an intermediate supply voltage and at least one supply voltage of one polarity with respect to the intermediate supply voltage and one supply voltage of the opposite polarity with respect to the intermediate supply voltage, the memory comprising:

a semiconductor substrate having a circuit area at least part of which is one dopant polarity and having a memory area of the opposite dopant polarity, the supply voltage of opposite polarity being applied to the circuit area and a supply voltage of the one polarity being applied to the memory area for establishing a reverse bias potential across the P-N junction formed along the interface between the circuit area of the one dopant polarity and the memory area of the opposite dopant polarity;

a plurality of opposite dopant polarity channel MOS switches formed in the circuit area of the semiconductor substrate for switching supply voltages of both polarities, the opposite dopant polarity elements of the switches being reversed biased with respect to the circuit area of the one dopant polarity by the supply voltage of the opposite polarity applied to the circuit area;

a row by column memory array having a plurality of memory cells with row and column gates formed in the memory area of the semiconductive substrate, and having row and column conductive leads extending to the plurality of switches, and addressed by the supply voltages as switched onto the row and column conductive leads by the plurality of switches for establishing the write mode and storage mode and read mode in the memory cells, each individual memory cell including;

a source element of the one dopant polarity;

a drain element of the one dopant polarity spaced from the source element;

active channel formed by that portion of the other area of the semiconductive substrate between the source ele-

ment and the drain element for conducting carriers of the opposite polarity during the write mode and for onducting carriers of the one polarity during the read mode;

a gate insulator formed over the active channel;

a row gate zone formed in the active channel between the source element and the drain element;

a row gate electrode formed on the gate insulator over the row gate zone;

the row gate zone responsive to the supply voltage of the one polarity for supporting conduction of the carriers of the opposite polarity during the write mode, depletion responsive to the intermediate supply voltage for inhibiting conduction of carrier of both polarities during the storage mode, and inversion responsive to a supply voltage of the opposite polarity for supporting conduction of the carriers of the one polarity during the read mode;

a column gate zone formed in the active channel between the source element and the drain element by a memory charge pocket proximate the gate insulator and a memory conductive region formed proximate the memory charge pocket; and

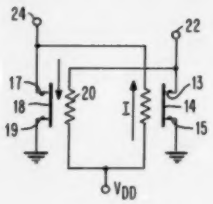
a column gate electrode formed on the gate insulator over the column gate zone.

4,158,239

RESISTIVE GATE FET FLIP-FLOP STORAGE CELL

Claude L. Bertin, Oakton, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1977, Ser. No. 862,476
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—182 **10 Claims**



1. A flip-flop circuit, comprising:

a first FET device having its source connected to a first potential;

a second FET device having its source connected to said first potential;

said first FET device having a gate electrode composed of a resistive material with a first side connected to the drain of said second FET device and a second side connected to a second potential;

said second FET device having a gate electrode composed of a resistive material with a first side connected to the drain of said first FET device and a second side connected to said second potential;

whereby a compact flip-flop circuit is formed.

4,158,240

METHOD AND SYSTEM FOR DATA CONVERSION

James D. Lewis, Lexington, Ky., and John A. Lowy, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

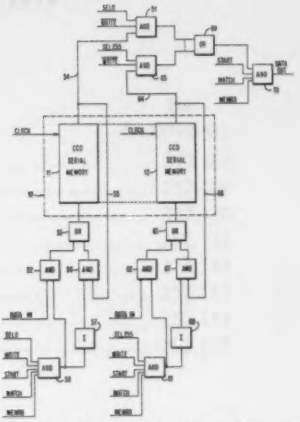
Filed Dec. 19, 1977, Ser. No. 861,593
Int. Cl.[2] G11C *7/00, 19/00*
U.S. Cl. 365—189 **28 Claims**

1. A data conversion system including:

dynamic storage means having a plurality of storage cell means;

means to scan data in each of said storage cell means of said dynamic storage means at a first rate;

and means to read data from each of said storage cell means of said dynamic storage means at a second rate slower than the first rate.



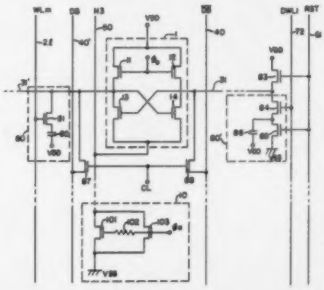
2. The system according to claim 1 including means to write data into each of said storage cell means of said dynamic storage means at the second rate.

4,158,241

SEMICONDUCTOR MEMORY DEVICE WITH A PLURALITY OF MEMORY CELLS AND A SENSE AMPLIFIER CIRCUIT THEREOF

Yoshihiro Takemae, Kawasaki, and Tomio Nakano, Yokohama, both of Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 15, 1978, Ser. No. 915,864
Int. Cl.[2] G11C *7/06*
U.S. Cl. 365—205 **7 Claims**



1. A sense amplifier circuit for amplifying a voltage difference between separated two conductors comprising,

(a) a flip-flop circuit having a pair of cross-coupled amplifying elements, said two conductors being connected to said flip-flop circuit, and

(b) a driving circuit connected to said flip-flop circuit for controlling a current flowing through said flip-flop circuit, said driving circuit having at least two MIS transistors having gates which are connected via a resistive means, wherein a signal for driving said driving circuit is directly applied to the gate of one of said MIS transistors and wherein said signal is applied to the other of said MIS transistors through said resistive means with time delay.

DESIGN PATENTS

GRANTED JUN. 12, 1979

ERRATA

For CLASS	See PATENT NO.
D21–027	252,108
D21–208	252,109
D21–210	252,110
D21–114	252,111
D21–064	252,112
D21–076	252,113
D03–067	252,114
D03–038	252,115

DESIGN PATENTS

GRANTED JUN. 13, 1978

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D27-029	252,107
D32-030	252,108
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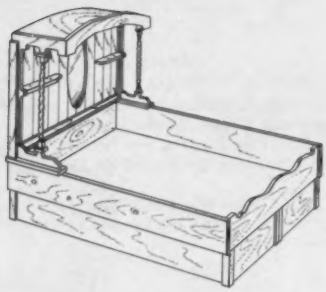
D34-114	252,110
D35-034	252,111
D37-076	252,112
D39-067	252,113
D42-053	252,114

DESIGNS

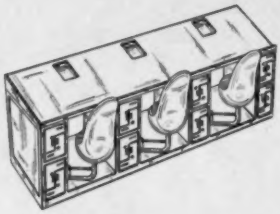
JUNE 12, 1979

252,056
BED
Floyd R. Slaton, Rte. 3, Box 281, Sonora, Calif. 95370
Filed Jul. 8, 1976, Ser. No. 703,445
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83

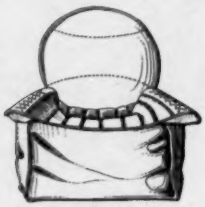


252,057
HASSOCK OR SIMILAR ARTICLE
Albert M. Spound, Tarzana, Calif., and Robert C. Day, Princeton, Mass., assignors to Charlton Company, Inc., Leominster, Mass.
Continuation-in-part of Ser. No. 678,963, Apr. 21, 1976, abandoned. This application Jun. 23, 1978, Ser. No. 918,566
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36

252,058
COMBINED MODULAR DESK AND MULTIPLE SEAT UNIT
Jimmy R. Patterson, 5337 Reef Way, Oxnard, Calif. 93030
Filed Jun. 6, 1977, Ser. No. 804,183
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45

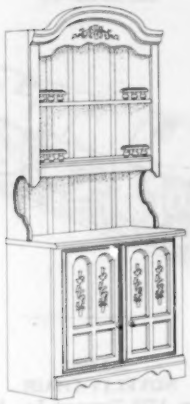


252,059
NOVELTY CHAIR
Umberto J. Cirrone, 1774 Turnpost La., Hacienda Heights, Calif. 91745
Filed Apr. 25, 1977, Ser. No. 790,282
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

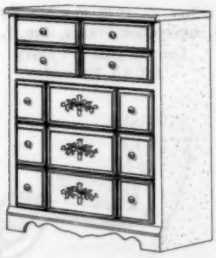


252,060
CHAIR
Jean Prevost, 18 Bis rue Danielle Casanova, 94170 Le Perreux, France
Filed Jun. 17, 1977, Ser. No. 807,747
Claims priority, application France, Jan. 7, 1977, 77 39871
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

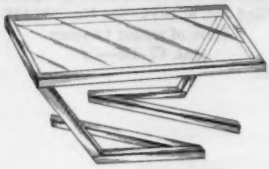
252,061
CHINA CABINET OR SIMILAR ARTICLE
Haywood L. West, 2510-D Suffolk Dr., High Point, N.C. 27603
Filed Jul. 18, 1977, Ser. No. 816,300
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



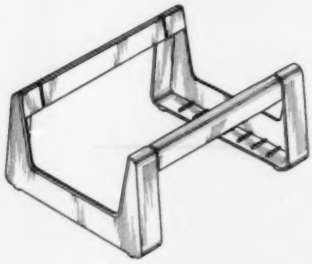
252,062
CHEST OR THE LIKE
Haywood L. West, 2510-D Suffolk Dr., High Point, N.C. 27603
Filed Jul. 18, 1977, Ser. No. 816,301
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



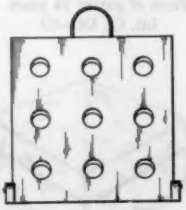
252,063
TABLE OR SIMILAR ARTICLE
Ronald K. Montague, 1450 Kirby Rd., McLean, Va. 22101
Filed Jun. 3, 1977, Ser. No. 803,111
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—172



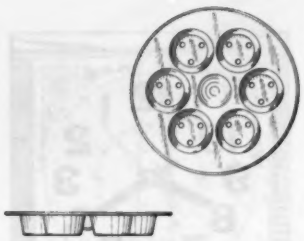
252,064
DISC RECORD RACK OR SIMILAR ARTICLE
Michael B. Woodhall, Maidenhead, England, assignor to Cambra International Limited, London, England
Filed Oct. 21, 1976, Ser. No. 734,621
Claims priority, application United Kingdom, Apr. 30, 1976, 975485
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—185



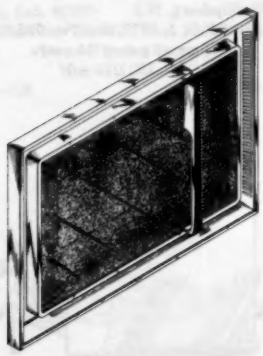
252,065
WINE BOTTLE DISPLAY RACK
Harold A. Leventhal, 405 E. 56 St., New York, N.Y. 10022
Filed May 12, 1977, Ser. No. 796,202
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D7—70



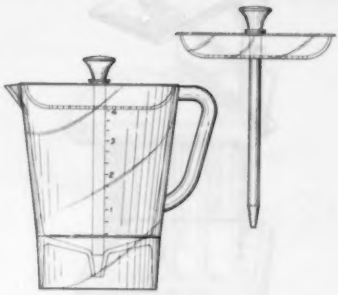
252,066
MICROWAVE OVEN COOKING UTENSIL
Calhoun G. Jeambey, 7013 Palm Dr., Des Moines, Iowa 50322
Filed Aug. 10, 1977, Ser. No. 823,550
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—96



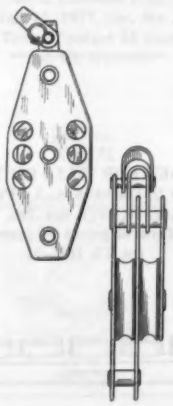
252,067
COMBINED MICROWAVE OVEN FRONT DOOR AND FRAME
John B. Tsen, and Charles H. Schmitt, both of Louisville, Ky., assignors to General Electric Company
Filed Aug. 22, 1977, Ser. No. 826,614
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—133



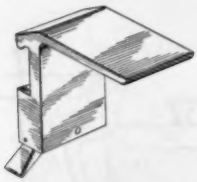
252,068
FAT SKIMMER
Margaret A. Lovely, 40 Strathmore Rd., Cranston, R.I. 02905
Filed Jan. 24, 1977, Ser. No. 762,467
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



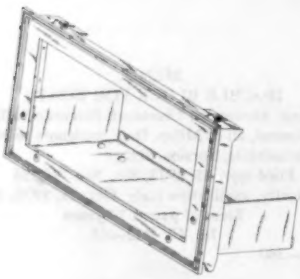
252,069
DOUBLE BLOCK FOR BOATS
Riccardo Nava; Alessandro Ubertazzi; Riccardo Soffientini, and Giorgio Romani, all of Milan, Italy, assignors to Nemo S.p.A. of Zona Industriale, Sarsina, Italy
Filed Apr. 11, 1977, Ser. No. 786,324
Claims priority, application Italy, Oct. 15, 1976, 14753 A/76
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—360



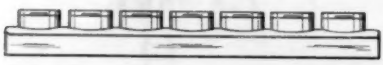
252,070
MOUNTING BRACKET FOR A RAIL SYSTEM
Ernst F. Schindele, 505 W. Hill Rd., Stamford, Conn. 06905
Filed Apr. 27, 1977, Ser. No. 791,566
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—363



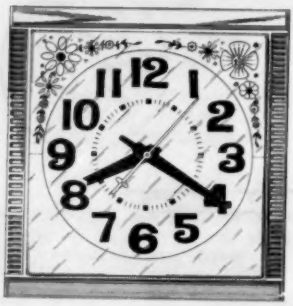
252,071
DISPLAY BRACKET
Edward Lieberman, Mt. Kisco, N.Y., assignor to Audiovox Corporation, Hauppauge, N.Y.
Filed May 27, 1977, Ser. No. 801,294
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



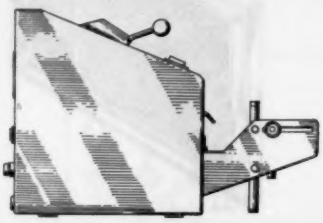
252,072
CONTAINER FOR PILLS OR THE LIKE
Roy G. Bridges, 641 S. Fourth Ave., La Puente, Calif. 91746
Filed Apr. 19, 1977, Ser. No. 788,893
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



252,073
ELECTRIC CLOCK OR SIMILAR ARTICLE
William J. Cook, Trumbull, and Theodore G. Daher, Stratford, both of Conn., assignors to General Electric Company
Filed Apr. 25, 1977, Ser. No. 790,242
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—9



252,074
DOCUMENT COUNTER
Kenneth A. Hams, Nazareth, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.
Filed Feb. 2, 1977, Ser. No. 765,025
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—97

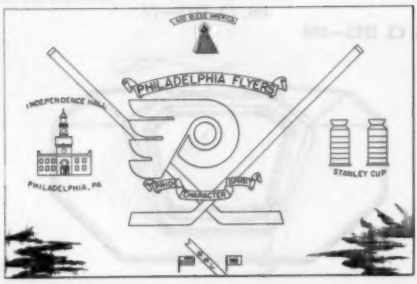


252,075
TRAFFIC POST
Milton T. Cory, Gastonia, and Jerry A. Phifer, Peachland, both of N.C., assignors to Radiator Specialty Company, Charlotte, N.C.
Filed Feb. 2, 1977, Ser. No. 764,941
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

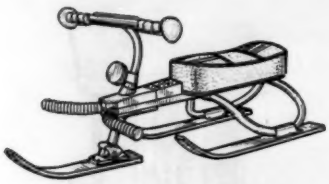
252,076
CHRISTMAS TREE FIGURINE
Dennis R. Pardus, 1808 Forest La. Lake of the Four Seasons, Crown Point, Ind. 46307
Filed May 25, 1977, Ser. No. 800,332
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—118

252,077
NOVELTY CAGE
Glenn E. Hager, 4829 S. Lawton St., Tulsa, Okla. 74107
Filed May 17, 1977, Ser. No. 797,901
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

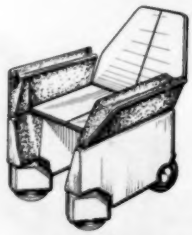
252,078
ATHLETIC TEAM FLAG
Norbert V. Filliben, 506 S. Elmwood Ave., Glenolden, Pa. 19036
Filed Jul. 12, 1977, Ser. No. 814,938
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—172



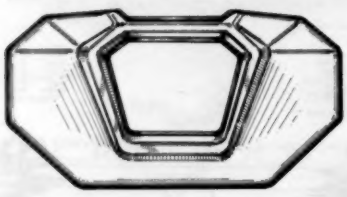
252,079
SNOW SCOOTER
Gennady G. Derkach, Timiryazevskaya ulitsa, 9, kv. 93, Moscow; Vladimir A. Kovtonjuk, Jubileiny prospekt, 74, kv. 234; Stanislav P. Bogdanovsky, prospekt Mira, 10, kv. 32, both of Khimki Moskovskoi oblasti; Lev A. Kuzmichev, B.Pereyaslavskaya ulitsa, 19, kv. 50, and Boris B. Makhonov, Putevoi proezd, 28, kv. 37, both of Moscow, all of U.S.S.R.
Filed Dec. 20, 1976, Ser. No. 752,391
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9



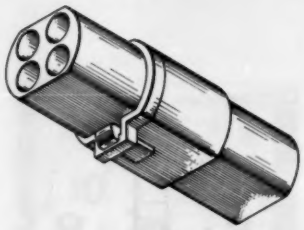
252,080
FOLDING ELECTRIC WHEELCHAIR
Robert VonHeck, 3205 Udall St., Pt. Loma, San Diego, Calif. 92106
Filed Feb. 2, 1977, Ser. No. 764,770
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131



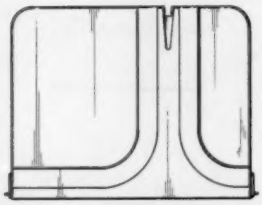
252,081
COMBINED SAFETY SHIELD AND FAIRING FOR MOTORCYCLES
Ronald L. Melby, Kent, Wash., assignor to K. C. Manufacturing, Inc., Kent, Wash.
Filed Aug. 10, 1977, Ser. No. 823,546
Term of patent 3½ years
Int. Cl. D12—*11*
U.S. Cl. D12—186



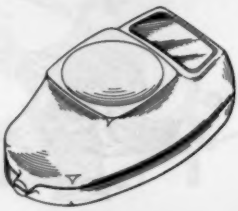
252,082
ELECTRICAL CONNECTOR BLOCK ASSEMBLY
Donald F. Voelkert, Elkhart, Ind., assignor to ElecTroMation, Inc., Elkhart, Ind.
Filed Aug. 18, 1977, Ser. No. 825,774
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



252,083
TERMINAL BOX
Joe M. Epstein, 4730 Briarbend, Houston, Tex. 77035
Filed Feb. 16, 1977, Ser. No. 768,966
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41



252,084
HOUSING FOR A MICROPHONE OR SIMILAR ARTICLE
Kazumasa Fujita, Iwaki, Japan, assignor to Alps Motorola Inc., Tokyo, Japan
Filed Mar. 14, 1977, Ser. No. 777,265
Claims priority, application Japan, Dec. 25, 1976, 51-50507
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



252,085

HOUSING FOR A MICROPHONE OR SIMILAR ARTICLE

Kazumasa Fujita, Iwaki, Japan, assignor to Alps Motorola Inc., Tokyo, Japan

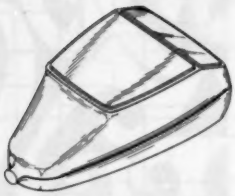
Filed Mar. 14, 1977, Ser. No. 777,266

Claims priority, application Japan, Dec. 25, 1976, 51-50509

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—12



252,086

ELECTRONIC PROCESSOR

Richard R. Calverley, Chatsworth, Calif., assignor to Computer Kinetics Corporation, Westlake Village, Calif.

Filed Aug. 10, 1977, Ser. No. 823,545

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—42

252,087

TELEPHONE STAND

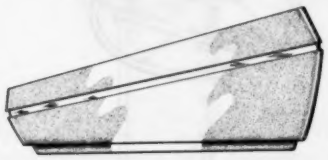
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa., and Gordon E. Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 604,592, Aug. 14, 1975, which is a continuation-in-part of Ser. No. 469,855, May 14, 1974, Pat. No. Des. 237,506, which is a continuation-in-part of Ser. No. 424,413, Dec. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 364,704, May 29, 1973, abandoned. This application Nov. 23, 1977, Ser. No. 854,470

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—60



252,088

SECURITY CLAMP FOR TELEPHONE EARPIECES

Tommy Johansson, Bokgatan 32, S-462 00 Vanersborg, Sweden

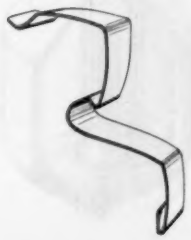
Filed Jul. 7, 1977, Ser. No. 813,710

Claims priority, application Sweden, Jan. 10, 1977, 770036

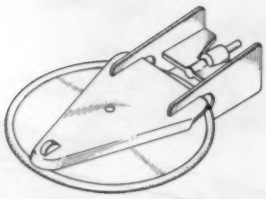
Term of patent 14 years

Int. Cl. D14—*03, 99*

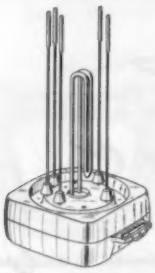
U.S. Cl. D14—65



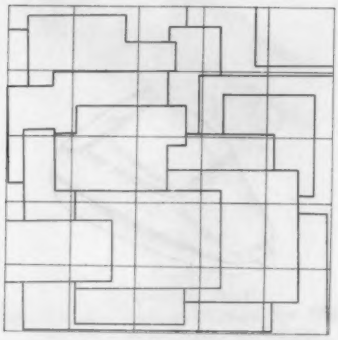
252,089
HEAD FOR A SWIMMING POOL CLEANER
Andrew L. Pansini, 200 Golden Gate Ave., Belvedere, Calif. 94920
Filed Oct. 31, 1977, Ser. No. 847,304
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—56



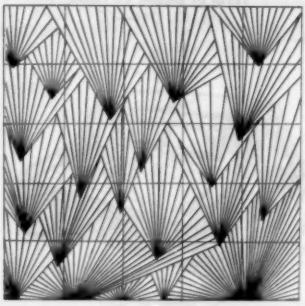
252,090
ELECTRIC GRILL
Hans J. H. Julkenbeck, Wijnjeterp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 20, 1977, Ser. No. 844,102
Claims priority, application Benelux, Apr. 27, 1977, 5184601
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—106



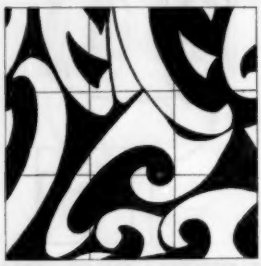
252,091
EDUCATIONAL AND/OR THERAPEUTIC GAME SET OR SIMILAR ARTICLE
Helen Popeck, 510 Myrtle Ave., Cheltenham, Pa. 19012
Filed Nov. 24, 1976, Ser. No. 744,748
Term of patent 7 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



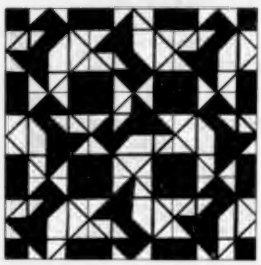
252,092
EDUCATIONAL AND/OR THERAPEUTIC GAME SET OR SIMILAR ARTICLE
Helen Popeck, 510 Myrtle Ave., Cheltenham, Pa. 19012
Filed Nov. 24, 1976, Ser. No. 744,750
Term of patent 7 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



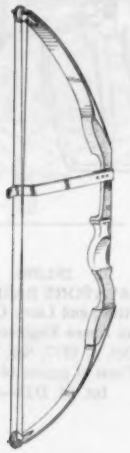
252,093
EDUCATIONAL AND/OR THERAPEUTIC GAME SET OR SIMILAR RTICLE
Helen Popeck, 510 Myrtle Ave., Cheltenham, Pa. 19012
Filed Nov. 24, 1976, Ser. No. 744,802
Term of patent 7 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



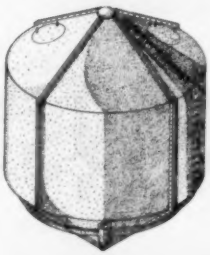
252,094
EDUCATIONAL AND/OR THERAPEUTIC GAME SET OR SIMILAR ARTICLE
Helen Popeck, 510 Myrtle Ave., Cheltenham, Pa. 19012
Filed Nov. 24, 1976, Ser. No. 744,805
Term of patent 7 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



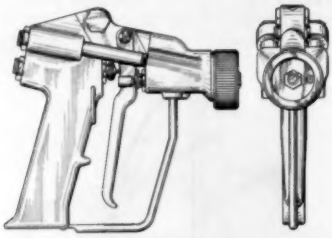
252,095
COMPOUND BOW WITH STRING-CABLE SPACER
Paul D. MacWilliams, 4039 Brunswick Ave., Los Angeles, Calif. 90039
Filed Sep. 26, 1977, Ser. No. 836,697
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—5



252,096
GRAIN BIN
Richard D. Graham, 3501 Forrest, Great Bend, Kans. 67530, and Dan A. Keener, 422 E. 7th St., La Crosse, Kans. 67548
Filed Aug. 15, 1977, Ser. No. 824,993
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



252,097
SPRAY GUN
Richard O. Probst, and James R. Maugans, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Feb. 1, 1978, Ser. No. 874,219
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17

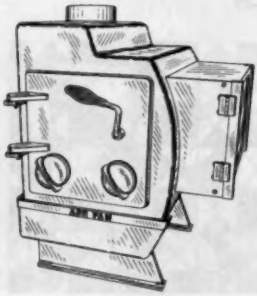


252,098
COMBINATION LAVATORY BASIN AND TOILET BOWL
Earl L. Morris, Whittier, and Larry O. Fields, La Puente, both of Calif., assignors to Acorn Engineering Co., Industry, Calif.
Filed Oct. 3, 1977, Ser. No. 838,951
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

252,099
LAVATORY BASIN
Earl L. Morris, Whittier, and Larry O. Fields, La Puente, both of Calif., assignors to Acorn Engineering Co., Industry, Calif.
Filed Oct. 3, 1977, Ser. No. 838,955
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

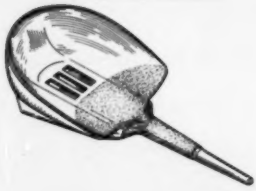
252,100
LAVATORY BASIN
Earl L. Morris, Whittier, and Larry O. Fields, La Puente, both of Calif., assignors to Acorn Engineering Co., Industry, Calif.
Filed Oct. 3, 1977, Ser. No. 838,956
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

252,101
WOOD STOVE
John S. Orlando, 1702 W. Second, Eugene, Oreg. 97402
Filed Sep. 6, 1977, Ser. No. 830,489
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



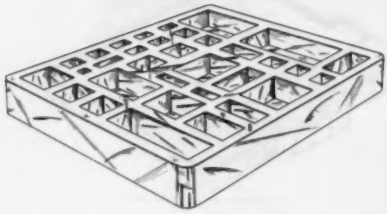
252,102
DISPENSER FOR AIR-TREATING MATERIAL
Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Philippe Lecomte, Plaisance Vouillé, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 15, 1977, Ser. No. 833,542
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

252,103
HYGIENIC SHEATH FOR A TEMPERATURE AND RESPIRATION SENSING PROBE
Paul O. Rawson, Easton; Louis E. Nagy, Killingworth, and George J. Veth, Fairfield, all of Conn., assignors to United States Surgical Corporation, Stamford, Conn.
Filed Apr. 20, 1977, Ser. No. 789,346
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

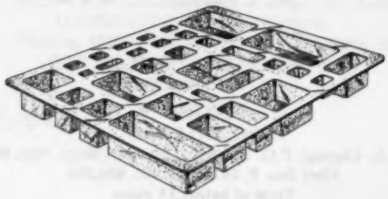


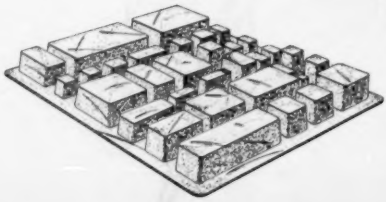
252,104
HYGIENIC SHEATH FOR A TEMPERATURE SENSING PROBE
Louis E. Nagy, Killingworth, and Paul O. Rawson, Easton, both of Conn., assignors to United States Surgical Corporation, Stamford, Conn.
Filed May 19, 1977, Ser. No. 798,599
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

252,105
NECROPSY BOARD FOR LARGE ANIMALS
Hedwig Baxter, West Chazy, N.Y., assignor to American Home Products Corp. (Del.), New York, N.Y.
Filed Apr. 18, 1977, Ser. No. 788,169
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31

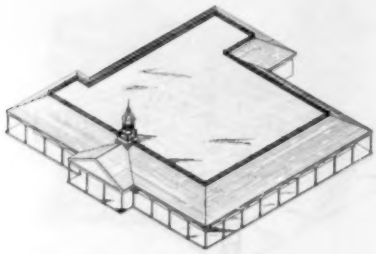


252,106
NECROPSY BOARD FOR LARGE ANIMALS
Hedwig Baxter, West Chazy, N.Y., assignor to American Home Products Corp. (Del.), New York, N.Y.
Division of Ser. No. 788,169, Apr. 18, 1977. This application Sep. 6, 1978, Ser. No. 940,056
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31

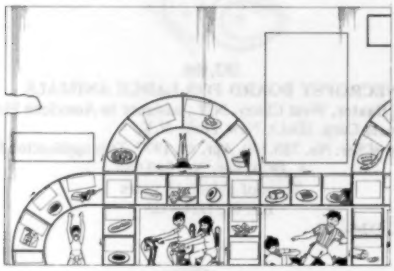




252,107
RESTAURANT BUILDING
Phillip F. Lindberg, Eugene, Oreg., assignor to Turkey Inn Enterprises, Inc., Bellingham, Wash.
Filed Apr. 22, 1977, Ser. No. 789,947
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25



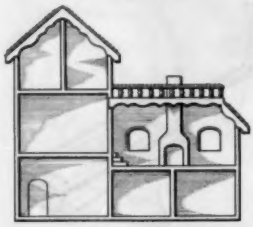
252,108
GAME BOARD
Maria E. d. G. Urosa, and Marcel Carvallo, both of Apartado 62.511, Caracas, Venezuela (106)
Filed Apr. 18, 1977, Ser. No. 788,701
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



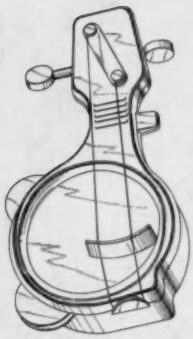
252,109
GOLF BALL TEE
Robert G. Clugage, P.O. Box 5905, Incline Village, Nev. 89450
Filed Jun. 9, 1977, Ser. No. 804,984
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—208

252,110
BALL STRIKER OR THE LIKE
Robert C. Llamas, 4543 W. 147th St., Lawndale, Calif. 90260
Filed Mar. 28, 1977, Ser. No. 781,657
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—210

252,111
DOLL HOUSE
Roy V. Friesen, 925 E. 1700 South, Salt Lake City, Utah 84115
Filed Apr. 4, 1977, Ser. No. 784,058
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

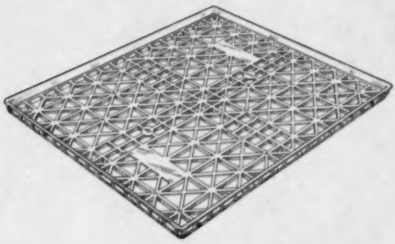


252,112
TOY MUSICAL INSTRUMENT
Michael J. Legnasky, Quakertown, Pa., and Matthew A. Moustakas, Mercerville, N.J., assignors to CBS Inc., New York, N.Y.
Filed May 24, 1977, Ser. No. 800,143
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64

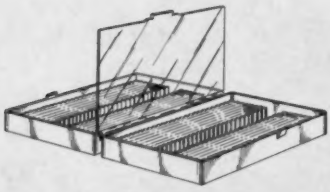


252,113
TOY VEHICLE
Wayne A. Effort, 79 College Ave., North Tarrytown, N.Y. 10591
Filed Oct. 25, 1977, Ser. No. 845,573
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76

252,114
BAKERY TRAY OR THE LIKE
James C. Carroll, and Victor D. Johns, both of Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 19, 1977, Ser. No. 834,199
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D3—67



252,115
COMBINED FLY AND JIG BOX
John L. Herring, 2626 S. 48th Ter., Kansas City, Kans. 66106
Filed Sep. 19, 1977, Ser. No. 834,693
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D3—38



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Greenberg, Jack; and Cloyd, Grover D., 4,158,051, Cl. 424-28.000.

A. W. Chesterton Company: *See*—
Kozlowski, Peter F., 4,157,833, Cl. 277-9.000.

Aagaard, Einar A.: *See*—
Dijkmans, Eise C.; and Aagaard, Einar A., 4,158,109, Cl. 179-18.0FA.

Aanensen, Oscar, to Marine Aluminum Aanensen & Co. A/S. Accommodation ladder arrangements. 4,157,742, Cl. 182-97.000.

AB Bofors: *See*—
Berntsson, Leif; Hedberg, Bengt; Karlsson, Soren; and Magnusson, Olof, 4,157,998, Cl. 260-42.130.
Hultgren, K. Sten R.; and Sundmar, J. P. Goran, 4,157,678, Cl. 89-47.000.

Abbe, Robert C.; and Poduje, Noel S., to ADE Corporation. Wafer edge detection system. 4,158,171, Cl. 324-158.00F.

Abe, Takeshi, to Ricoh Co., Ltd. Pulse transmission-reception system. 4,158,195, Cl. 340-150.000.

Abitbol, Moise M. Abdominal electrode for fetal monitoring. 4,157,710, Cl. 128-642.000.

ACF Industries, Incorporated: *See*—
Tipton, Larry J., 4,158,029, Cl. 261-51.000.

Addison, George E., to UOP Inc. Selected aromatic hydrocarbon production. 4,158,025, Cl. 585-321.000.

Addison, George E., to UOP Inc. Combination process for selected aromatic hydrocarbon production. 4,158,026, Cl. 585-321.000.

ADE Corporation: *See*—
Abbe, Robert C.; and Poduje, Noel S., 4,158,171, Cl. 324-158.00F.

AEG-TELEFUNKEN Kabelwerke Aktiengesellschaft, Rheydt: *See*—
Dageforde, Hans-Gerd; and Thonnessen, Gunter, 4,158,185, Cl. 333-243.000.

Agabekov, Youri. Light fixture. 4,158,221, Cl. 362-219.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Audibert, Francoise; Chedid, Louis; Lefrancier, Pierre; Choay, Jean; and Lederer, Edgar, 4,158,052, Cl. 424-45.000.
Barge, Jean; Catte, Raymond; Chapelet, Gilbert; Bui, Ai; Dejean, Pierre; Huraux, Claude; and Mayoux, Christian, 4,157,975, Cl. 252-63.500.
Bridoux, Edouard; Bruneel, Christian D.; Torguet, Roger J.; and Nongaillard, Bertrand, 4,157,665, Cl. 73-607.000.

Agers, Brian M., to Du Pont de Nemours, E. I., and Company. Fluid jet texturing apparatus. 4,157,605, Cl. 28-254.000.

Air Preheater Company, Inc., The: *See*—
Schaltenbrand, Eugene D., 4,157,901, Cl. 55-302.000.

Akesson, Yngve R.; and Lundgren, Bror F., to Produits Findus S.A. Machine for paring vegetables or fruits. 4,157,681, Cl. 99-538.000.

Akzona Incorporated: *See*—
Loew, Harold F., 4,157,606, Cl. 28-271.000.
Roskott, Lodewijk; and Schroeder, Arnold, 4,158,021, Cl. 568-567.000.
van der Burg, Willem J., 4,158,058, Cl. 424-256.000.
van der Burg, Willem J., 4,158,059, Cl. 424-267.000.

Albany International Corp.: *See*—
Sick, Paul J.; and Hazel, James W., 4,157,752, Cl. 198-847.000.

Alcan Research and Development Limited: *See*—
Deutschman, John E., 4,158,042, Cl. 423-126.000.

Alexoff, Carl: *See*—
Goldman, Max; and Alexoff, Carl, 4,157,829, Cl. 273-138.00A.

Alfio, Deregibus, to Goodyear Tire & Rubber Company, The. Device for extracting very long cores from rubbery hose articles formed thereabout. 4,157,886, Cl. 425-438.000.

Allegheny Ludlum Industries, Inc.: *See*—
Malagari, Frank A., Jr.; Miller, Robert F.; Shilling, Jack W.; and Wells, James H., 4,157,925, Cl. 148-111.000.

Allen-Bradley Company: *See*—
Struger, Odo J.; and Grants, Valdis, 4,158,226, Cl. 364-104.000.

Allied Chemical Corporation: *See*—
Bergman, Kenneth A.; and Bishop, Robert J., 4,157,841, Cl. 297-482.000.
Jaffe, James; O'Rourke, Thomas J.; and Chu, Arthur S., 4,158,036, Cl. 422-142.000.
Ostrozynski, Robert L.; Orfeo, Sabatino R.; Jones, Philip E.; and Lund, Earl A. E., 4,157,976, Cl. 252-67.000.
Oswald, Hendrikus J.; Li, Hsin L.; Butler, Russell H.; and Liland, Alfred L., 4,157,604, Cl. 28-221.000.

AM International, Inc.: *See*—
Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W., 4,157,682, Cl. 101-148.000.
Roberts, William E., 4,157,870, Cl. 355-121.000.

Amann, Gilbert J.: *See*—
Moyaux, Alain G.; Amann, Gilbert J.; Lebrun, Amedee; Poupon, Michel; and Gorgeret, Gerard, 4,157,817, Cl. 266-222.000.

American Citrus Machinery Inc.: *See*—
Butler, Donald L., 4,157,642, Cl. 56-329.000.

American Cyanamid Company: *See*—
Shultz, Walter; Sieger, George M.; and Krieger, Charles, 4,158,055, Cl. 424-241.000.

American Electronic Laboratories, Inc.: *See*—
Pessel, Leopold, 4,157,988, Cl. 252-440.000.

American Hoechst Corporation: *See*—
Wanat, Stanley F.; and Barton, Oliver A., 4,157,918, Cl. 96-75.000.

American Home Products Corporation: *See*—
Baturay, Susan E.; Dzury, Daniel S.; and Lueschen, William J., 4,157,921, Cl. 134-4.000.

American Sterilizer Company: *See*—
Miraldi, Peter T., 4,158,040, Cl. 422-297.000.

AMF Incorporated: *See*—
Dever, Thomas R., 4,158,150, Cl. 307-252.00B.

Ammann, David W.: *See*—
Granzow, Daniel B.; Carter, Garry L.; and Ammann, David W., 4,157,723, Cl. 141-1.000.

Amsen, Willem H.: *See*—
Smeulers, Wouter; and Amsen, Willem H., 4,158,146, Cl. 307-213.000.

Anderson Jacobson, Inc.: *See*—
Mason, Roy G., 4,158,106, Cl. 179-2.00C.

Anderson, Richard J., to Zoecon Corporation. Intermediates for insect pheromone. 4,158,096, Cl. 560-262.000.

Anderson, Robert J.; and Studholme, Robert M., to Beckman Instruments, Inc. System for rate immunonephelometric analysis. 4,157,871, Cl. 356-341.000.

Andersson, Roland J. E.: *See*—
Riede, Gerhard; Larsson, Lars-Ake L.; Andersson, Roland J. E.; and Jonsson, Sven A., 4,158,034, Cl. 422-36.000.

Andrae, Ralph N. Vacuum molder. 4,157,884, Cl. 425-173.000.

Andrich, Millard: *See*—
Senter, Robert L.; and Andrich, Millard, 4,157,800, Cl. 248-72.000.

Antos, George J., to UOP Inc. Superactive multimetallic catalytic composite. 4,157,989, Cl. 252-441.000.

Aono, Toshiaki: *See*—
Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, 4,157,916, Cl. 96-56.500.

Aotsuka, Yasuo: *See*—
Ueda, Hirozo; and Aotsuka, Yasuo, 4,157,917, Cl. 96-69.000.

Aoyama, Toshiho, to Chuo Hatsujo Kabushiki Kaisha. Exhaust gas purifier for internal combustion engine. 4,158,037, Cl. 422-179.000.

Arashi, Masahiko: *See*—
Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, 4,157,779, Cl. 228-176.000.

Archambault, Yves; Epsztein, Bernard; and Le Clerc, Bernard, to Thomson-CSF. Parametric coupling device for traveling-waves. 4,158,177, Cl. 330-4.600.

Armstrong Cork Company: *See*—
Lewicki, Walter J., Jr.; and McQuate, William M., 4,158,070, Cl. 427-8.000.
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,158,073, Cl. 427-195.000.

Asahi-Dow Limited: *See*—
Izawa, Shinichi; Ohzeki, Jurou; Yahata, Tsuyoshi; and Nakanishi, Atsuo, 4,158,028, Cl. 260-876.00B.

Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, to Shinagana Refractories Co. Ltd.; and Sumito Metal Industries, Ltd. Method for the prevention of slaking of dolomite bricks. 4,157,621, Cl. 34-13.000.

Atlantic Richfield Company: *See*—
Baillie, Lloyd A., 4,157,985, Cl. 252-417.000.

Audibert, Francoise; Chedid, Louis; Lefrancier, Pierre; Choay, Jean; and Lederer, Edgar, to Agence Nationale de Valorisation de la Recherche (ANVAR). Oil-free adjuvant compositions containing N-acetyl-muramyl-L-alanyl-D-isoglutamine. 4,158,052, Cl. 424-45.000.

Auman, John T.: *See*—
Rogers, Wesley A.; and Auman, John T., 4,158,191, Cl. 340-52.00H.

Automated Building Components, Inc.: *See*—
Jureit, John C., 4,157,676, Cl. 85-13.000.

Ayers, Orval E.: *See*—
Chew, William M.; Murfree, James A.; Martignoni, Pasquale; Nappier, Henry A.; and Ayers, Orval E., 4,157,927, Cl. 149-22.000.

B.P.T. S.p.A.: *See*—
Plozner, Lisio, 4,158,215, Cl. 361-260.000.

B.R. Lee Industries, Inc.: *See*—
Lee, Billy R., 4,157,877, Cl. 404-128.000.

Babcock & Wilcox Company, The: *See*—
Kahlow, Kurt J.; and Holbrook, Richard L., 4,157,654, Cl. 72-367.000.

Bacs, Laszlo: *See*—
Spaeth, Werner; and Bacs, Laszlo, 4,158,133, Cl. 250-211.00J.

Baehr, Edward F., to United States of America, National Aeronautics and Space Administration. Intra-ocular pressure normalization technique and equipment. 4,157,718, Cl. 128-276.000.

Bailey, Alan C., to Corning Glass Works. Method of drawing glass optical waveguides. 4,157,906, Cl. 65-3.00A.

Bailey, Thomas D.; and McGill, Charles K., to Reilly Tar & Chemical Corporation. Process for substituting and dequaternizing pyridylethyl quaternary salts of pyridine and bypyridine bases. 4,158,093, Cl. 542-455.000.

Baillie, Lloyd A., to Atlantic Richfield Company. Chemical conversion method. 4,157,985, Cl. 252-417.000.

Balod, Marcelo M. Cigarette pipe having a tar cartridge. 4,157,721, Cl. 131-187.000.

Balopole, Harvey L., to Fairchild Camera and Instrument Corporation. Dual clock logic system for charge-coupled device driver circuit. 4,158,181, Cl. 331-55.000.

Bandag, Incorporated: *See*—
McDonough, John C.; Rary, James K.; Birth, Arden; and Kuzma, John J., Jr., 4,157,727, Cl. 157-13.000.

Bandtel, Eberhard: *See*—
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, 4,157,986, Cl. 252-432.000.

Banowitz, Benjamin, to TV Time, Inc. Meltable hard candy article. 4,158,064, Cl. 426-76.000.

Banucci, Eugene G.: *See*—
Boldebuck, Edith M.; and Banucci, Eugene G., 4,157,996, Cl. 260-30.200.

Barge, Jean; Catte, Raymond; Chapelet, Gilbert; Bui, Ai; Dejean, Pierre; Huraux, Claude; and Msyoux, Christian, to Agence Nationale de Valorisation de la Recherche (ANVAR). Electrical insulators having increased resistance to partial discharges. 4,157,975, Cl. 252-63.500.

Barie, Walter P., Jr.: *See*—
Sabourin, Edward T.; and Barie, Walter P., Jr., 4,158,090, Cl. 528-92.000.

Barnes, Clive: *See*—
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Barton, Oliver A.: *See*—
Wanat, Stanley F.; and Barton, Oliver A., 4,157,918, Cl. 96-75.000.

Bartsch, Rudolf; Bolter, Bruno; Kohler, Ulrich; and Ritschel, Josef, to Deutsche Rhodiaceta AG. Packaging for compressed fibers, filaments or cabled tows. 4,157,754, Cl. 206-83.500.

BASF Aktiengesellschaft: *See*—
Dehnert, Johannes; and Dunkelmann, Guenter, 4,157,893, Cl. 8-41.00R.
Hagen, Helmut; Naarmann, Herbert; and Penzien, Klaus, 4,158,086, Cl. 521-90.000.
Merger, Franz; and Segnitz, Adolph, 4,158,017, Cl. 260-585.00B.
Naarmann, Herbert; and Penzien, Klaus, 4,158,097, Cl. 560-223.000.
Reuther, Wolfgang; Raff, Paul; Pommer, Ernst-Heinrich; and Heidenreich, Hans-Peter, 4,158,001, Cl. 260-141.000.
Schenck, Hans-Uwe; and Hirsch, Guenter, 4,157,995, Cl. 260-29.6RW.
Weitz, Hans-Martin; Hartig, Juergen; and Platz, Rolf, 4,158,008, Cl. 260-348.160.

BASF Wyandotte Corporation: *See*—
Login, Robert B., 4,158,083, Cl. 428-389.000.

Baturay, Susan E.; Dzury, Daniel S.; and Lueschen, William J., to American Home Products Corporation. Oven cleaning method and composition. 4,157,921, Cl. 134-4.000.

Baumgartner, Alfons, to Dr. Johannes Heidenhain GmbH. Electronic counter. 4,158,129, Cl. 235-92.0CA.

Baxter, John V.: *See*—
Sterling, Henley F.; Weir, Donald A.; George, Rodger G.; and Baxter, John V., 4,158,170, Cl. 324-96.000.

Baxter Travenol Laboratories, Inc.: *See*—
Granzow, Daniel B.; Carter, Garry L.; and Ammann, David W., 4,157,723, Cl. 141-1.000.
Meyst, Richard P.; and Porten, Ronald M., 4,157,967, Cl. 210-449.000.

Baxter, William D.; and Metz, Robert L., to Bunker Ramo Corporation. Paged memory mapping with elimination of recurrent decoding. 4,158,227, Cl. 364-200.000.

Bayer Aktiengesellschaft: *See*—
Benn, Otto; Cornils, Rolf; and Giersiepen, Gerhard, 4,157,790, Cl. 241-22.000.
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, 4,157,986, Cl. 252-432.000.

BBC Brown, Boveri & Company Limited: *See*—
Gohrich, Klaus; and Vogt, Heinz, 4,158,143, Cl. 250-505.000.

Beauch, Howard D., to General Motors Corporation. Steering column electrical connector arrangement. 4,157,854, Cl. 339-3.00S.

Beaujean, Joseph M. E., to Bogey B.V. Apparatus for controlled transmission of torque by means of a hydraulic fluid. 4,157,748, Cl. 192-58.00B.

Beckman Instruments, Inc.: *See*—
Anderson, Robert J.; and Studholme, Robert M., 4,157,871, Cl. 356-341.000.

Bedinghaus, W. H. Maps and charts holder. 4,157,626, Cl. 40-518.000.

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Bell & Howell Company: *See*—
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Bell, Robert L., to Kaylico Corporation. Capacitive pressure transducer with improved electrode. 4,158,217, Cl. 361-283.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cerbone, Ralph L.; Lindsay, Robert A.; Noonan, John M.; and Rudroff, Martin G., 4,158,112, Cl. 179-99.00A.
Marcatili, Enrique A. J., 4,157,860, Cl. 350-96.140.
Rainal, Attilio J., 4,157,612, Cl. 29-628.000.
Shevchuk, George J., 4,157,856, Cl. 339-75.00R.

Belousofsky, Bruce. Laminated ferro-cement structures and method of fabrication. 4,158,082, Cl. 428-256.000.

Beltx Corporation: *See*—
DeWoskin, Irvin S., 4,157,719, Cl. 128-291.000.

Bendix Corporation, The: *See*—
Bourdon, Normand C.; and Sanford, Richard, 4,157,806, Cl. 249-184.000.

Benn, Otto; Cornils, Rolf; and Giersiepen, Gerhard, to Bayer Aktiengesellschaft. Production of low-filler rubber powders by the grinding process. 4,157,790, Cl. 241-22.000.

Bennett, Allan I.: *See*—
Harrold, Ronald T.; and Bennett, Allan I., 4,158,169, Cl. 324-52.000.

Bennett, Derek J., to Bunker Ramo Corporation. Ship motion compensator for recovery of oceanographic instrumentation. 4,157,812, Cl. 254-172.000.

Bentley Laboratories, Inc.: *See*—
Raible, Donald A., 4,157,965, Cl. 210-305.000.

Bergman, Kenneth A.; and Bishop, Robert J., to Allied Chemical Corporation. Safety belt connector cover. 4,157,841, Cl. 297-482.000.

Bergquist, Frank H., to Harper-Wyman Company. Thermostatic gas valve. 4,157,786, Cl. 236-15.00A.

Bernard, Jean R.; and Bousquet, Jacques, to Societe Nationale Elf Aquitaine. Catalytic process for treating light gasoline stocks. 4,157,949, Cl. 208-112.000.

Berntsson, Leif; Hedberg, Bengt; Karlsson, Soren; and Magnusson, Olof, to AB Bofors. Method of producing a cement mortar with good stability in a fresh condition and a method using this mortar as a binding agent of producing a lightweight aggregate concrete with a high aggregate content. 4,157,998, Cl. 260-42.130.

Bertin, Claude L., to International Business Machines Corporation. Resistive gate FET flip-flop storage cell. 4,158,239, Cl. 365-182.000.

Betlejewski, Frank W.; and Klein, Robert A., to Bell & Howell Company. Rotatable carrying handle arrangement. 4,157,763, Cl. 220-94.00R.

Bigelow, John E., to General Electric Company. Capacitive touch control. 4,158,216, Cl. 361-280.000.

Bildstein, Hubert: *See*—
Egger, Lambert; and Bildstein, Hubert, 4,158,078, Cl. 428-103.000.

Bilhorn, John M., to Yardney Electric Corporation. Electrode with separator beads embedded therein. 4,158,085, Cl. 429-130.000.

Birth, Arden: *See*—
McDonough, John C.; Rary, James K.; Birth, Arden; and Kuzma, John J., Jr., 4,157,727, Cl. 157-13.000.

Bishop, Robert J.: *See*—
Bergman, Kenneth A.; and Bishop, Robert J., 4,157,841, Cl. 297-482.000.

Bishop, Stephen G.; McCombe, Bruce D.; and Koschel, Wulf H., to United States of America, Navy. Iron-doped indium phosphide semiconductor laser. 4,158,207, Cl. 357-18.000.

Bitterlin, Otto; and Dussy, Paul, to Ciba-Geigy AG. Metallized bis-formazans. 4,158,003, Cl. 260-146.00T.

Bjorkman, Leif A. B.; and Eklund, Lars-Erik J., to Elektra Regummeringsteknik Aktiebolag. Method of retreading vehicle tires using microwave heating. 4,157,930, Cl. 156-96.000.

Blau KG Fabrik fur Kraftfahrzeugteile: *See*—
Gerdes, Theodor, 4,157,766, Cl. 220-306.000.

Bleasdale, Barrie: *See*—
Lund, Kenneth; and Bleasdale, Barrie, 4,157,690, Cl. 112-226.000.

Bodor, Nicolae S.; and Yuan, Sun-Shine, to Interx Research Corporation. Intermediates useful in the synthesis of optically active m-acyloxy-α-[(methylamino)methyl]benzyl alcohols. 4,158,005, Cl. 546-15.000.

Body, Alexander S., to D.A.B. Industries, Inc. Brake band end connection. 4,157,746, Cl. 188-77.00R.

Boeing Company, The: *See*—
Ihlenfeldt, Eugene T.; and Marshall, David E., 4,157,663, Cl. 73-361.000.

Bogey B.V.: *See*—
Beaujean, Joseph M. E., 4,157,748, Cl. 192-58.00B.

Bohg, Armin; Briska, Marian; and Garben, Bernd, to International Business Machines Corporation. Method for making connections between contacts. 4,158,072, Cl. 427-43.000.

Boldebuck, Edith M.; and Banucci, Eugene G., to General Electric Company. Coating solution of polyetherimide-forming monomers. 4,157,996, Cl. 260-30.200.

Bollman, James E., to Xerox Corporation. Transparency reproducing machine. 4,157,869, Cl. 355-4.000.

Bolter, Bruno: *See*—
Bartsch, Rudolf; Bolter, Bruno; Kohler, Ulrich; and Ritschel, Josef, 4,157,754, Cl. 206-83.500.

Bolus, Daniel M. A. F.; Chevillon, Jean-Pierre; Comte, Jean-Charles; and Philippe, Pierre D. P., to International Standard Electric Corporation. Protective device for an electronic junctor. 4,158,214, Cl. 361-91.000.

Bombardelli, Ezio, to Inverni della Beffa S.p.A. Production and analysis of ginseng root extract. 4,157,894, Cl. 23-230.00R.

Bonnel, Michel G., to Societe Colmant Cuvelier. Burner for powdered fuel. 4,157,889, Cl. 431-182.000.

Boon, Derk J., to Reeves Brothers, Inc. Centrifugal process for production of polyurethane foam. 4,158,032, Cl. 264-51.000.

Bopp, Richard C.: *See*—
DeMejo, Lawrence P.; and Bopp, Richard C., 4,157,997, Cl. 260-40.00R.

Borden, George W.; Smith, Oliver W.; and Trecker, David J., to Union Carbide Corporation. Coating and ink compositions and method. 4,157,947, Cl. 204-159.230.

Borner, William G.: *See*—
Scarpellino, Anthony J., Jr.; McEwen, James; and Borner, William G., 4,157,943, Cl. 204-37.00R.

Borst, Adolf H. Combined waste water clarification and trash disposal system. 4,157,961, Cl. 210-33.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Husslein, Julius, 4,158,127, Cl. 219-446.000.

Bosies, Elmar: *See*—
Hitzel, Volker; Weyer, Rudi; and Bosies, Elmar, 4,158,063, Cl. 424-324.000.

Boston Insulated Wire & Cable Co.: *See*—
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Botsch, Franz; Heinze, Christoph; and Wolff, Horst, to Hoechst Aktiengesellschaft. Process for the manufacture of vinyl chloride polymer dispersions with a low monomer content. 4,158,092, Cl. 528-500.000.

Bouis, Robert L.: *See*—
Williams, R. L.; Latiolais, Rene L.; Gabriel, John L.; and Bouis, Robert L., 4,157,847, Cl. 299-6.000.

Bourdon, Normand C.; and Sanford, Richard, to Bendix Corporation, The. Apparatus for making electrical connector insert. 4,157,806, Cl. 249-184.000.

Bousquet, Jacques: *See*—
Bernard, Jean R.; and Bousquet, Jacques, 4,157,949, Cl. 208-112.000.

Bowen, James A.: *See*—
Falterman, Charles W.; Bowen, James A.; and Josephson, Larry H., 4,157,928, Cl. 149-109.200.

Bowser, Roger C. Entertainment lighting display. 4,157,625, Cl. 40-427.000.

Boyer, Curtis E.; and Mosier, Jacques, to Ford Motor Company. Digital speedometer for indicating velocity in at least two selectable units of measurement. 4,158,172, Cl. 324-166.000.

Bozik, John E.: *See*—
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Brady, Margaret I.: *See*—
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Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, to J. M. Voith GmbH. Device and method for rolling up continuous sheets. 4,157,794, Cl. 242-66.000.

Brechlin, Alfred; and Herrmann, Heinz, to Hoechst Aktiengesellschaft. Electrophotographic liquid developer and process for the manufacture thereof. 4,157,974, Cl. 252-62.10L.

Brennan, Richard L.; and Lane, George A., to Dow Chemical Company, The. Composition and method for inflation of passive restraint systems. 4,157,648, Cl. 60-205.000.

Brewer, Wendell N., to Goodyear Tire & Rubber Company, The. Tire safety support. 4,157,726, Cl. 152-330.0RF.

Bricot, Claude; Le Carvennec, Francois; and Robin, Gerard, to Thomson-Brandt. Process for producing information carrying discs. 4,157,931, Cl. 156-230.000.

Bridoux, Edouard; Bruneel, Christian D.; Torguet, Roger J.; and Nongaillard, Bertrand, to Agence Nationale de Valorisation de la Recherche (ANVAR). Formation of acoustical images. 4,157,665, Cl. 73-607.000.

Bright, William L. Enclosure for equipment. 4,158,102, Cl. 174-52.00R.

Briska, Marian: *See*—
Bohg, Armin; Briska, Marian; and Garben, Bernd, 4,158,072, Cl. 427-43.000.

Bristol-Myers Company: *See*—
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Britt, William J., to Morton-Norwich Products, Inc. Triple function closure. 4,157,768, Cl. 222-42.000.

Brocklehurst, Charles E.; and Burton, Perry E., to Opelika Manufacturing Corp. Label dispensing system for use with sewing apparatus. 4,157,692, Cl. 112-262.300.

Bronec, Joseph A.: *See*—
Openchowski, Richard A.; and Bronec, Joseph A., 4,157,693, Cl. 113-120.00H.

Brown, Gary W.; Whittington, Jimmie L.; and Geller, Douglas A., to WHAM-O Mfg. Co. Toy gun. 4,157,703, Cl. 124-55.000.

Brownstein, Arthur M.: *See*—
Sherwin, Martin B.; and Brownstein, Arthur M., 4,158,100, Cl. 568-715.000.

Bruneel, Christian D.: *See*—
Bridoux, Edouard; Bruneel, Christian D.; Torguet, Roger J.; and Nongaillard, Bertrand, 4,157,665, Cl. 73-607.000.

Bruno, Mario. Motor saw blade. 4,157,673, Cl. 83-837.000.

Buckeye International, Inc.: *See*—
Johnson, Clark E., Jr.; and Main, William F., 4,158,203, Cl. 346-35.000.

Bui, Ai: *See*—
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Bunker Ramo Corporation: *See*—
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Bennett, Derek J., 4,157,812, Cl. 254-172.000.

Burdette, Fredrick E., to Garrett Corporation, The. Seal system. 4,157,834, Cl. 277-13.000.

Burkett, Joseph C. D.C. controller for battery powered electric motor. 4,158,158, Cl. 318-139.000.

Burleigh Instruments, Inc.: *See*—
May, William G., Jr., 4,157,802, Cl. 248-346.000.

Burns, Richard H.: *See*—
Smith, Michael R.; and Burns, Richard H., 4,158,201, Cl. 340-783.000.

Burroughs Corporation: *See*—
Call, Duane B.; and Hopkins, Larry K., 4,158,235, Cl. 364-900.000.
Kachidurian, Adam, 4,157,909, Cl. 65-269.000.
Muster, Frank L.; Korytkowski, Henry M.; and Dear, Frederick H., 4,157,783, Cl. 235-379.000.
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, G. Irvin, 4,158,200, Cl. 340-750.000.

Burton, Perry E.: *See*—
Brocklehurst, Charles E.; and Burton, Perry E., 4,157,692, Cl. 112-262.300.

Bussjager, Rudy C.; and Del Toro, James J., to Carrier Corporation. Multiple compressor heat pump with coordinated defrost. 4,157,649, Cl. 62-81.000.

Butler, David; and Cichanski, Frank. Rotary switching device. 4,158,114, Cl. 200-1.00R.

Butler, Donald L., to American Citrus Machinery Inc. Catch frame for fruit picker. 4,157,642, Cl. 56-329.000.

Butler, Russell H.: *See*—
Oswald, Hendrikus J.; Li, Hsin L.; Butler, Russell H.; and Liland, Alfred L., 4,157,604, Cl. 28-221.000.

Byford, Robert. Fishing rod holder. 4,157,804, Cl. 248-512.000.

Byrd, William J.: *See*—
Haase, Thomas; and Byrd, William J., 4,158,035, Cl. 422-100.000.

Caan, Michael N. Range guard. 4,157,705, Cl. 126-211.000.

California R & D Center: *See*—
Sims, Anson; and Jones, Lawrence T., 4,157,826, Cl. 272-53.200.

Call, Duane B.; and Hopkins, Larry K., to Burroughs Corporation. Multi port time-shared associative buffer storage pool. 4,158,235, Cl. 364-900.000.

Campagnolo, Tullio. Fixture for special gears, particularly of bicycles. 4,157,608, Cl. 29-240.000.

Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., to United States of America, National Aeronautics and Space Administration. Coal-shale interface detection system. 4,157,655, Cl. 73-12.000.

Campbell, Roy E.; and Wilkinson, John D., to Ortloff Corporation, The. Hydrocarbon gas processing. 4,157,904, Cl. 62-27.000.

Canadian General Electric Company Limited: *See*—
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Canfield, Alan R.; Faupell, Lawrence C.; and Cardall, Stanley H., to Thiokol Corporation. Low friction, movable, rocket nozzle. 4,157,788, Cl. 239-265.350.

Canon Kabushiki Kaisha: *See*—
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Toyama, Masamichi; Takigawa, Tomoshi; and Iwama, Hideto, 4,157,866, Cl. 352-171.000.
Yokota, Hideo, 4,157,867, Cl. 354-158.000.

Capriotti, Lawrence J. Lubricating and cooling engine system component. 4,157,744, Cl. 184-6.300.

Carbert, Ralph E. Overload protection apparatus for hydraulic multifunction equipment. 4,157,736, Cl. 173-11.000.

Carborundum Company, The: *See*—
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Cardall, Stanley H.: *See*—
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Carey, Lester G., to General Motors Corporation. Closure mechanism. 4,157,853, Cl. 312-246.000.

Carlberg, George. Animal litter pellets. 4,157,696, Cl. 119-1.000.

Carlson, Kenneth R.; and Fry, Arthur R., to Elco Industries, Inc. Collar stud for use in plastic. 4,157,674, Cl. 85-1.00R.

Carlyle, Lance J. Fastener for footwear. 4,157,622, Cl. 36-50.000.

Carrier Corporation: *See*—
Bussjager, Rudy C.; and Del Toro, James J., 4,157,649, Cl. 62-81.000.
Freliech, Robert A., 4,157,785, Cl. 236-1.00G.

Carse, Clifford C. Volume adjustable and easily disassembled fluid dispensing apparatus. 4,157,772, Cl. 222-180.000.

Carter, Garry L.: *See*—
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Casagrande, Serge. Spot welder control circuit. 4,158,121, Cl. 219-114.000.

Caspi, Abraham: *See—*
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Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., to May & Baker Limited. Cyclopentane derivatives. 4,158,062, Cl. 424-331.000.
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CEA Carter-Day Company: *See—*
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Cebal: *See—*
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Celanese Corporation: *See—*
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Cerbone, Ralph L.; Lindsay, Robert A.; Noonan, John M.; and Rudroff, Martin G., to Bell Telephone Laboratories, Incorporated. Hands-free answer arrangement on intercom for key telephone system. 4,158,112, Cl. 179-99.00A.
Cerliani, Alberto, to Costruzioni Meccaniche Cerliani S.p.A. Spool case for sewing machines. 4,157,691, Cl. 112-229.000.
CGEE Alsthom: *See—*
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CGR Medical Corporation: *See—*
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Chakerian, Jonathan P. Method of producing bleached, dried fruit. 4,157,620, Cl. 34-12.000.
Challen, Richard F., to General Electric Company. Temperature control circuit. 4,158,180, Cl. 330-298.000.
Champion International Corporation: *See—*
Golden, Ronald, 4,157,983, Cl. 252-316.000.
Chan, See F. Electric socket and plug. 4,157,855, Cl. 339-45.00R.
Chang, Richard C.; and Ward, Robert R., to Monsanto Company. Method for enhancing membrane separation. 4,157,960, Cl. 210-23.00R.
Chang, Uck I.: *See—*
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Chapelet, Gilbert: *See—*
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Charles, George K., to Wincanton Engineering Limited. Drainage plates. 4,157,680, Cl. 99-454.000.
Chedid, Louis: *See—*
Audibert, Francoise; Chedid, Louis; Lefrancier, Pierre; Choay, Jean; and Lederer, Edgar, 4,158,052, Cl. 424-45.000.
Chem Systems, Inc.: *See—*
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Chemed Corporation: *See—*
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Chenil Cont GS. S.R.L.: *See—*
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Chevillon, Jean-Pierre: *See—*
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Cislak, Raymond S., to Gateway Industries, Inc. Method and apparatus for automatically sewing belts. 4,157,687, Cl. 112-121.270.
Clarey, Michael T. Air-pressure splint. 4,157,713, Cl. 128-87.00R.
Clark, John W. Decoder for identification of bacteria. 4,158,199, Cl. 340-711.000.
Clark, Joseph A., to United States of America, Navy. Acousto-optic modulator. 4,157,863, Cl. 350-358.000.
Clausser, Karl C. Safety filler for underloaded firearm cartridge. 4,157,684, Cl. 102-38.00R.
Clemens, Matthew L.; and Morton, Wendell J., to Procter & Gamble Company, The. Method and apparatus for continuously expelling an atomized stream of water from a moving fibrous web. 4,157,938, Cl. 162-207.000.
Clemons, E. Dale; and Daust, John T., to Monsanto Company. Dispersed rosin. 4,157,982, Cl. 252-311.000.
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Conner, George E. Pre-vaporization system. 4,157,700, Cl. 123-122.00E.
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Cook, Richard D., to Gulf & Western Industries, Inc. Limited visibility signal device. 4,158,222, Cl. 362-269.000.
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Cosmopulos, Stavros. Disc launching and catching device. 4,157,828, Cl. 273-96.00R.
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Cox, Duane S. Enriched wheat macaroni. 4,158,069, Cl. 426-557.000.
Crawford, George E., Jr. Man-machine interface system. 4,158,196, Cl. 340-163.000.
Crenshaw, Ronnie R.; and Luke, George M., to Bristol-Myers Company. N-Cyano-N'-alkynyl-N''-2-mercaptoethylguanidines. 4,158,013, Cl. 260-551.00C.
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Danilin, Jury I.; Maringulov, Konstantin A.; Voronkov, Leonid A.; Mokeev, Mikhail N.; and Khripov, Anatoly M. Electric woven switching matrix. 4,158,103, Cl. 174-68.500.
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Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, to Bayer Aktiengesellschaft. Abrasion resistant catalyst. 4,157,986, Cl. 252-432.000.
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Dehnert, Johannes; and Dunkelmann, Guenter, to BASF Aktiengesellschaft. Uniformly dyed water-swellable cellulosic fibers. 4,157,893, Cl. 8-41.00R.
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Despois, Jacques; and Nougarede, Francis, to Commissariat a l'Energie Atomique; and Societe Nationale Elf Aquitaine. System for the storage and recovery of heat in a captive layer. 4,157,730, Cl. 165-45.000.
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Deutschenbaur, Paul; and Lippacher, Wolfgang, to Hilti Aktiengesellschaft. Self-drilling dowel with drill head. 4,157,677, Cl. 85-68.000.
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DeWoskin, Irvin S., to Beltx Corporation. Method and apparatus for ultrasonic sealing and cutting, and tabs produced thereby. 4,157,719, Cl. 128-291.000.
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DiGiulio, Mario. Lockable articulated joint. 4,157,876, Cl. 403-90.000.
Dijkmans, Eise C.; and Aagaard, Einar A., to U.S. Philips Corporation. Interference insensitive line supervision circuit. 4,158,109, Cl. 179-18.0FA.
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Dolan, John E. Clothes hanger. 4,157,776, Cl. 223-92.000.
Dolhyj, Serge R.; and Milberger, Ernest C., to Standard Oil Company. Catalyst compositions especially useful for preparation of unsaturated acids. 4,157,987, Cl. 252-437.000.
Donakowski, William A.; and Morgan, John R., to Ford Motor Company. Method of adherency of electrodeposits on light weight metals. 4,157,941, Cl. 204-33.000.
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Eckberg, Edwin E. Low voltage fluorescent lamp having a plurality of cathode means. 4,158,153, Cl. 313-491.000.
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Edwards, Colin R., to National Research Development Corporation. Unidirectional signal paths. 4,158,147, Cl. 307-216.000.
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Elliott, Olin S. Front screen for carding machines. 4,157,601, Cl. 19-95.000.
Elmer, Frederick L., to Pacific Handy Cutter Inc. Device for supporting a limp container. 4,157,801, Cl. 248-97.000.
Elms, William J.; and Weitzel, Steven A., to Dow Chemical Company, The. Process of applying weldable coating compositions to a metallic substrate. 4,157,924, Cl. 148-6.200.
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Everett, Robert A. Aerial toy. 4,157,632, Cl. 46-74.00D.
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Foltz, Carl L.; Troutner, Vernon H.; and Trott, Arthur F., to Concept, Inc. Wire inserter and sterile wire pack. 4,157,714, Cl. 128-92.00B.
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Jackson, Mark H., 4,157,740, Cl. 180-77.0TC.
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Forrester, Harold C., to Louisville Bedding Company. Ratio indicator for ruffling apparatus. 4,157,688, Cl. 112-132.000.
Fox, Anthony. Seating assembly for aircraft. 4,157,797, Cl. 244-122.00R.
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Frye, Kenneth G., to Lenox Machine Company, Inc. High bulk slitter. 4,157,672, Cl. 83-500.000.
Frye, Norman V. Motorcycle. 4,157,739, Cl. 180-33.00R.
Fuji Photo Film Co., Ltd.: *See*—
Hamaoka, Tsutomu; Ogawa, Junkichi; and Shimamura, Isao, 4,157,915, Cl. 96-55.000.
Kanda, Masao; and Nakamura, Hiroaki, 4,157,903, Cl. 55-393.000.
Ueda, Hirozo; and Aotsuka, Yasuo, 4,157,917, Cl. 96-69.000.
Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, 4,157,916, Cl. 96-56.500.
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Fukuma, Nobuo; and Katou, Yoshito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Planetary gearing with flexible friction surfaces. 4,157,668, Cl. 74-798.000.
Fukuya, Suejiro: *See*—
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.
Funabiki, Kyohei; Matsushima, Noriaki; and Inoue, Naomitsu, to Sumitomo Durez Company, Ltd. Resin-coated sand compositions. 4,157,993, Cl. 260-28.00P.
Funahashi, Kazutoshi; and Saito, Yoichi, to Teijin Limited. Process for preparing dinitroazo- (or azoxy-)benzene. 4,158,002, Cl. 260-143.000.
Furminger, Ian G.; and Brady, Margaret I., to Duncan Flockhart & Co. Ltd. Preparation of virus sub-unit vaccines. 4,158,054, Cl. 424-89.000.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See*—
Grottrup, Helmut; Kaule, Wittich; Maurer, Thomas; and Stenzel, Gerhard, 4,157,784, Cl. 235-491.000.
Gabriel, John L.: *See*—
Williams, R. L.; Latiolais, Rene L.; Gabriel, John L.; and Bouis, Robert L., 4,157,847, Cl. 299-6.000.
Gagne, Robert, to PPG Industries, Inc. Method and apparatus for thickness control of float glass with toothed cylindrical member that has axis extended in the direction of glass flow. 4,157,908, Cl. 65-99.00A.
Gallaher, John K., Jr. Composite cover-support for electronic equipment and instructional materials. 4,157,757, Cl. 206-328.000.
Gallantree, Howitt R.: *See*—
Quilliam, Robert M.; Gallantree, Howitt R.; and Watt, Andrew J., 4,158,117, Cl. 200-181.000.
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Garnier, Patrice, to Cidelcem. Conveyor plant. 4,157,753, Cl. 198-856.000.
Garrett Corporation, The: *See*—
Burdette, Fredrick E., 4,157,834, Cl. 277-13.000.
Gaskill, Emanuel P. Water heater. 4,157,706, Cl. 126-271.000.
Gates Rubber Company, The: *See*—
Pennell, Phillip E., 4,157,602, Cl. 24-73.00A.
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Gateway Industries, Inc.: *See*—
Cislak, Raymond S., 4,157,687, Cl. 112-121.270.
Gaynor, Jon E. Human body stimulation device. 4,157,712, Cl. 128-57.000.
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Geller, Douglas A.: *See*—
Brown, Gary W.; Whittington, Jimmie L.; and Geller, Douglas A., 4,157,703, Cl. 124-55.000.
General Dynamics Electronics Division: *See*—
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Bigelow, John E., 4,158,216, Cl. 361-280.000.
Boldebuck, Edith M.; and Banucci, Eugene G., 4,157,996, Cl. 260-30.200.
Challen, Richard F., 4,158,180, Cl. 330-298.000.
DeMejo, Lawrence P.; and Bopp, Richard C., 4,157,997, Cl. 260-40.00R.
Klompas, Nicholas, 4,157,880, Cl. 415-115.000.
Niznik, George E., 4,158,094, Cl. 544-68.000.
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Carey, Lester G., 4,157,853, Cl. 312-246.000.
Rogers, Wesley A.; and Auman, John T., 4,158,191, Cl. 340-52.00H.
Sarosy, Edmund F.; and Kwasiborski, Stanley, Jr., 4,157,844, Cl. 292-48.000.
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Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., 4,157,912, Cl. 75-101.00R.
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Gerber Products Company: *See*—
Kelly, Vincent J., 4,158,066, Cl. 426-419.000.
Gerdes, Theodor, to Blau KG Fabrik fur Kraftfahrzeugteile. Arrangement for cap-like closure covers. 4,157,766, Cl. 220-306.000.
Gerwin, Harry L., to United States of America, Army. Warhead fuze seeker. 4,157,685, Cl. 102-214.000.
Getz, John E.; and Tylenda, Francis P., to Fruehauf Corporation. Brake assembly. 4,157,747, Cl. 188-341.000.
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Kaplan, Jean-Pierre; Raizon, Bernard M.; Obitz, Daniel C. L.; Manoury, Philippe M. J.; Najer, Henry; Jalfre, Maurice; and Giudicelli, Don P. R. L., 4,158,060, Cl. 424-274.000.
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Gloster, Arthur, to Texasgulf Inc. Process for producing soda ash from natural alkali metal carbonate-containing ores. 4,158,043, Cl. 423-206.00T.
Gohrich, Klaus; and Vogt, Heinz, to BBC Browr., Boveri & Company Limited. Tube for irradiation equipment. 4,158,143, Cl. 250-505.000.
Goldberg, Viktor, to Neumo Armaturenfabrik-Apparatebau-Metalligiesserei GmbH. Hydrodynamic evacuator. 4,157,717, Cl. 128-227.000.
Golden, Ronald, to Champion International Corporation. Process for production of encapsulated water-dispersible materials. 4,157,983, Cl. 252-316.000.
Goldhammer, Albert. Drive for cutting rollers of paper shredding or cutting apparatus. 4,157,671, Cl. 83-492.000.
Goldman, Max; and Alexoff, Carl, to System Operations, Inc. Instant lottery game employing vending machines which are centrally controlled by computers. 4,157,829, Cl. 273-138.00A.
Goldwater, Alan J. Phase plug. 4,157,741, Cl. 181-159.000.
Golebiewsky, Francois, to Cebal. Inviolability device for container having its neck closed by a screw cap. 4,157,765, Cl. 220-265.000.
Goodfellow, Anthony G., to Dunlop Limited. Tire tread molding apparatus. 4,157,933, Cl. 156-414.000.
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Alfio, Deregibus, 4,157,886, Cl. 425-438.000.
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Gorgeret, Gerard: *See*—
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Smith, Edward M., 4,157,771, Cl. 222-103.000.
Gough, Michael R., to Labatt Breweries of Canada Limited. Top loading compartmented beverage carton. 4,157,755, Cl. 206-193.000.
Gould Inc.: *See*—
Krakik, Andrew J., 4,158,119, Cl. 200-240.000.
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Perreault, Richard J., 4,158,187, Cl. 337-248.000.
Graf, Ronald E. Electrostatic switch. 4,158,118, Cl. 200-181.000.
Graf, Werner; John, Peter; and Fuzy, Volker, to Wacker-Chemie GmbH. Process for preparing organosilanes. 4,158,010, Cl. 260-448.20P.
Grammer, Willibald: *See*—
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Granberg, Albert J. Liquid meter with compensated dual outputs. 4,157,662, Cl. 73-233.000.
Grandchamp, Pierre-Andre, to Hoffmann-La Roche Inc. Autocorrelation function parameter determination. 4,158,234, Cl. 364-834.000.
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Granzow, Daniel B.; Carter, Garry L.; and Ammann, David W., to Baxter Travenol Laboratories, Inc. Method of forming a connection between two sealed conduits using radiant energy. 4,157,723, Cl. 141-1.000.
Greatbatch, Wilson. Cardiac pacemaker. 4,157,720, Cl. 128-419.00P.
Green, Thomas A. Motor-tender lift. 4,157,596, Cl. 9-34.000.
Greenberg, Jack; and Cloyd, Grover D., to A. H. Robins Company, Inc. Pet collar. 4,158,051, Cl. 424-28.000.
Greene, James A.; Nevin, Robert S.; and Sharabash, Moustafa M., to Eli Lilly and Company. Aqueous emulsion polymer nail coating formulations. 4,158,053, Cl. 424-61.000.
Grice, Karl R., Jr., to Fiber Controls Corporation. Engine horsepower measurement system. 4,157,658, Cl. 73-133.00R.
Griffith, Neil J., to Spin Physics, Inc. Multitrack magnetic heads. 4,158,213, Cl. 360-121.000.
Gross, Franz, to Siemens Aktiengesellschaft. Delay line for transit time amplifier tubes. 4,158,154, Cl. 315-3.500.
Grottrup, Helmut; Kaule, Wittich; Maurer, Thomas; and Stenzel, Gerhard, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Safeguard against falsification of securities and the like which is suitable for automatic machines. 4,157,784, Cl. 235-491.000.
Gruenberger, Gerhard; Merkle, Heinz; and Sunkler, Anton, to Siemens Aktiengesellschaft. Circuit arrangement for the production of a control signal in a receiving channel which is subject to interference. 4,158,174, Cl. 325-404.000.
Grundken, Dieter; and Redder, Manfred, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyors. 4,157,751, Cl. 198-735.000.
Grundler, Donald F., to United States of America, Navy. Semiconductor laser modulating circuit. 4,158,151, Cl. 307-312.000.
Grunewald, Paul: *See*—
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Guibert, Raul. Cryogenic rapid food cooling machine. 4,157,650, Cl. 62-374.000.
Gulf Research & Development Company: *See*—
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Haase, Thomas; and Byrd, William J. Multiple sample micropipette. 4,158,035, Cl. 422-100.000.
Haber, Terry M.; and Fernandez, Marlin D., to Fernandez, Joseph L. Molding apparatus for a composite billiard ball. 4,157,805, Cl. 249-91.000.
Hagen, Helmut; Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Flameproof thermoplastic molding material. 4,158,086, Cl. 521-90.000.
Hager, Walter; and Muller, Richard, to Pfaff Industriemaschinen GmbH. Sewing assembly with a feed drive for a work holder. 4,157,686, Cl. 112-121.120.
Haimson, Jacob, to Haimson Research Corporation. Method and apparatus incorporating no moving parts, for producing and selectively directing x-rays to different points on an object. 4,158,142, Cl. 250-445.00T.
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Haller, George S.; and Uphoff, Theodore C. Apparatus for lifting a manhole cover. 4,157,809, Cl. 254-131.000.
Haller, George S.; and Uphoff, Theodore C. Apparatus for lifting a manhole cover. 4,157,810, Cl. 254-131.000.
Haller, George S.; and Uphoff, Theodore C. Apparatus for lifting a manhole cover. 4,157,811, Cl. 254-131.000.
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Hamaoka, Tsutomu; Ogawa, Junkichi; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material containing development precursor. 4,157,915, Cl. 96-55.000.
Hanson, Robert C.: *See*—
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Harrold, Ronald T.; and Bennett, Allan I., to Westinghouse Electric Corp. Corona testing apparatus including acoustic waveguides for transmitting acoustic emissions from electrical apparatus. 4,158,169, Cl. 324-52.000.

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Hassall, Anthony G., to Hunter Wire Products Limited. Centrifuge equipment. 4,157,966, Cl. 210-380.00R.

Hasselbacher, Wilhelm. Connector for metal parts. 4,157,641, Cl. 52-802.000.

Hauenstein, Alfred, to Siemens Aktiengesellschaft. Ignition circuit for extinguishing tubes in electronic flash equipment. 4,158,155, Cl. 315-151.000.

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Hedberg, Bengt: *See—*
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Hellstrom, Melbourne J., to CGR Medical Corporation. Microprocessor controlled X-ray generator. 4,158,138, Cl. 250-402.000.

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Ogasawala, Nobuhiko; and Kikuchi, Masao, 4,157,702, Cl. 123-149.00C.
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Hitzel, Volker; Weyer, Rudi; and Bosies, Elmar, to Hoechst Aktiengesellschaft. Acylamino(alkyl)benzene derivatives and process for preparing them. 4,158,063, Cl. 424-324.000.

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Holmes, Frank A., to Jaybee Manufacturing Corporation. Wide-angled self contained hinge for panel door cabinet. 4,157,599, Cl. 16-163.000.

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Holtrop, Peter B. J., deceased; by Holtrop, Juliet, executrix; and Hewitt, John T. Diesel engine control means. 4,157,701, Cl. 123-140.0MC.

Honeywell Inc.: *See—*
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Horrix, Willi: *See—*
Schaffer, Johann; and Horrix, Willi, 4,158,045, Cl. 423-245.000.

Horsch, Joachim, to International Harvester Company. Lubricant cooled friction clutch with two rates of flow. 4,157,750, Cl. 192-113.00B.

Hoshino, Koei: *See—*
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.

Hosono, Isamu: *See—*
Tojo, Akio; Ohnishi, Kimimasa; Hosono, Isamu; and Ogawa, Mikiyoshi, 4,157,722, Cl. 139-450.000.

Hotten, Bruce W., to Chevron Research Company. Multipurpose lubricating oil additive and compositions containing same. 4,157,972, Cl. 252-51.50A.

Hovhannessian, Karnig. Adjustable sun hat. 4,157,592, Cl. 2-177.000.

Howard, John F., to Canadian General Electric Company Limited. Fuse with free standing helical fuse element and method of making the same. 4,158,188, Cl. 337-290.000.

Huang, Jerry Y. C.; Wilson, George E.; and Fischbach, Phillip C. Filtration method and apparatus. 4,157,962, Cl. 210-42.00R.

Hubka, Theodore; and Slater, Robert W., to Singer Company, The. Receiver bandwidth conservation in a Doppler radar. 4,158,202, Cl. 343-8.000.

Hucks, William E.: *See—*
McLaurin, Eugene D.; Hucks, William E.; and Love, Gordon R., 4,158,218, Cl. 361-308.000.

Hudgins, Jerry L.: *See—*
Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., 4,157,655, Cl. 73-12.000.

Huebner Bros. of Canada Ltd.: *See—*
Egger, Lambert; and Bildstein, Hubert, 4,158,078, Cl. 428-103.000.

Hughes Aircraft Company: *See—*
Seliger, Robert L.; and Sullivan, Paul A., 4,158,141, Cl. 250-492.00A.
Wong, Mon N.; and Ibrao, Stanley T., 4,158,183, Cl. 333-21.00A.

Hultgren, K. Sten R.; and Sundmar, J. P. Goran, to AB Bofors. Rammer device. 4,157,678, Cl. 89-47.000.

Hunt, John T.; and Renard, Paul A., to United States of America, Energy. Spatial filter system as an optical relay line. 4,158,176, Cl. 330-4.300.

Hunter Wire Products Limited: *See—*
Hassall, Anthony G., 4,157,966, Cl. 210-380.00R.

Huraux, Claude: *See—*
Barge, Jean; Catte, Raymond; Chapelet, Gilbert; Bui, Ai; Dejean, Pierre; Huraux, Claude; and Mayoux, Christian, 4,157,975, Cl. 252-63.500.

Husslein, Julius, to Bosch-Siemens Hausgerate GmbH. Stove top. 4,158,127, Cl. 219-446.000.

Hyvarinen, Olli V. J., to Outokumpu, Oy. Process for selective removal of bismuth and antimony from an electrolyte, especially in electrolytic refining of copper. 4,157,946, Cl. 204-108.000.

Ibrao, Stanley T.: *See—*
Wong, Mon N.; and Ibrao, Stanley T., 4,158,183, Cl. 333-21.00A.

ICI Americas Inc.: *See—*
Restaino, Alfred J., 4,158,027, Cl. 260-859.00R.

Ihlenfeldt, Eugene T.; and Marshall, David E., to Boeing Company, The. Automatic thermocouple reference junction compensator. 4,157,663, Cl. 73-361.000.

Iida, Noboru: *See—*
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,158,075, Cl. 427-220.000.

Ikoma, Toshiaki: *See—*
Kamei, Kiyoo; Ikoma, Toshiaki; and Tokuda, Hirokuni, 4,157,610, Cl. 29-571.000.

Imler, Vaughn R., to PPG Industries, Inc. Apparatus for tempering flat or curved glass sheets. 4,157,910, Cl. 65-351.000.

Immel, Otto: *See—*
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, 4,157,986, Cl. 252-432.000.

Imperial Chemical Industries Limited: *See—*
Robinson, James D., 4,157,762, Cl. 220-1.00R.

Imura, Kenji, to Minolta Camera Kabushiki Kaisha. Eye fundus plethysmograph assembly. 4,157,708, Cl. 128-666.000.

Independent Machine Company: *See—*
Lucia, Jack S., 4,157,793, Cl. 242-35.50R.

Ingram, Woodrow H., II, to Monsanto Company. Resole resin and polyvinyl acetate impregnated filter paper. 4,157,937, Cl. 162-135.000.

Inland Steel Company: *See—*
Saviski, Frederic E.; Slagley, William E.; and Strangway, Peter K., 4,157,815, Cl. 266-193.000.

Inmont Corporation: *See—*
Totty, Stuart M.; and Meier, James A., 4,157,994, Cl. 260-29.4UA.

Inoue, Naomitsu: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inoue, Naomitsu, 4,157,993, Cl. 260-28.00P.

Instytut Mechaniki Precyzyjnej: *See—*
Tuznik, Franciszek; and Lis, Andrzej, 4,157,942, Cl. 204-35.00R.

Integrated Flow Systems, Inc.: *See—*
Eidsmore, Alva A., 4,157,808, Cl. 251-205.000.

International Business Machines Corporation: *See—*
Bertin, Claude L., 4,158,239, Cl. 365-182.000.
Bohg, Armin; Briska, Marian; and Garben, Bernd, 4,158,072, Cl. 427-43.000.
Kuhn, Lawrence; Myers, Robert A.; and Russo, Roy L., 4,158,204, Cl. 346-75.000.
Lewis, James D.; and Lowy, John A., 4,158,240, Cl. 365-189.000.
Miller, Myrl J., 4,157,822, Cl. 271-3.100.
Solyst, Erik R., 4,157,935, Cl. 156-644.000.
Wiedmann, Siegfried K., 4,158,237, Cl. 365-154.000.

International Data Sciences, Inc.: *See—*
D'Antonio, Renato A., 4,158,193, Cl. 340-146.10D.

International Harvester Company: *See—*
Horsch, Joachim, 4,157,750, Cl. 192-113.00B.
Olsson, Nils O.; and Flood, William, 4,157,735, Cl. 172-240.000.

International Lead Zinc Research Organization, Inc.: *See—*
Ward, John J. B.; and Barnes, Clive, 4,157,945, Cl. 204-51.000.

International Nickel Company, Inc., The: *See—*
Scarpellino, Anthony J., Jr.; McEwen, James; and Borner, William G., 4,157,943, Cl. 204-37.00R.

International Standard Electric Corporation: *See—*
Bolus, Daniel M. A. F.; Chevillon, Jean-Pierre; Comte, Jean-Charles; and Philippe, Pierre D. P., 4,158,214, Cl. 361-91.000.
Sterling, Henley F.; Weir, Donald A.; George, Rodger G.; and Baxter, John V., 4,158,170, Cl. 324-96.000.

International Telephone & Telegraph Corp.: *See—*
Saxon, Bruce R., 4,158,111, Cl. 179-99.00A.

Interx Research Corporation: *See—*
Bodor, Nicolae S.; and Yuan, Sun-Shine, 4,158,005, Cl. 546-15.000.

Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; and Hamano, Hideaki, to Migita Patent Office. Method for pretreatment in the production of tin-free steel. 4,157,944, Cl. 204-41.000.

Inukai, Takashi; and Sato, Hideo, to Chisso Corporation. p'-Cyanophenyl ester of p-(β-alkoxy)ethoxybenzoic acid. 4,158,011, Cl. 260-465.00D.

Inventing S.A.: *See—*
Wallsten, Hans I., 4,158,076, Cl. 427-294.000.

Inverni della Beffa S.p.A.: *See—*
Bombardelli, Ezio, 4,157,894, Cl. 23-230.00R.

Irion, Leonhard: *See—*
Schabert, Hans-Peter; Irion, Leonhard; and Seidelberger, Hartmut, 4,157,939, Cl. 176-38.000.

Isenberg, Arnold O., to Westinghouse Electric Corp. Combustibles analyzer. 4,158,166, Cl. 324-29.000.

Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, to Nippon Sanso K.K. Process for producing a metal vacuum bottle. 4,157,779, Cl. 228-176.000.

Ishijima, Saburo: *See—*
Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, 4,157,779, Cl. 228-176.000.

Ito, Akira: *See—*
Iwao, Tetsuya; Kono, Masahiro; Sasaki, Heizo; and Ito, Akira, 4,158,088, Cl. 526-128.000.

Ito, Minoru, to Ricoh Co., Ltd. Dot printing apparatus. 4,157,873, Cl. 400-124.000.

Ito, Teruo: *See—*
Takahashi, Norio; and Ito, Teruo, 4,157,647, Cl. 58-85.500.

Itoh, Tadanao: *See—*
Mitamura, Ryota; and Itoh, Tadanao, 4,157,728, Cl. 164-4.000.

Ivanovsky Nauchno-Issledo-Valetelsky Experimentalnokonstruktorsky Mashinostroitelny Institut: *See—*
Evdokimov, Valery N.; Zeldin, July R.; and Kuznetsov, Vladimir A., 4,158,128, Cl. 219-469.000.

Iwama, Hideto: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; and Iwama, Hideto, 4,157,866, Cl. 352-171.000.

Iwao, Tetsuya; Kono, Masahiro; Sasaki, Heizo; and Ito, Akira, to Mitsui Toatsu Chemicals, Inc. Process for the polymerization of ethylene or α-olefins and catalyst therefor. 4,158,088, Cl. 526-128.000.

Izawa, Shinichi; Ohzeki, Jurou; Yahata, Tsuyoshi; and Nakanishi, Atsuo, to Asahi-Dow Limited. Polyphenylene ether-styrene graft copolymer composition and preparation thereof. 4,158,028, Cl. 260-876.00B.

J. I. Case Company: *See—*
Nelson, Carl D., 4,157,745, Cl. 188-31.000.

J. M. Huber Corporation: *See—*
Oder, Robin R., 4,157,954, Cl. 209-214.000.
Wason, Satish K.; and Mays, Robert K., 4,157,920, Cl. 106-292.000.

J. M. Voith GmbH: *See—*
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.

Jackson, Mark H., to Ford Motor Company. Remote shift control for a tilt cab truck. 4,157,740, Cl. 180-77.0TC.

Jackson, Raymond. Cable kit for making a remote controlled truck mirror. 4,157,862, Cl. 350-303.000.

Jaffe, James; O'Rourke, Thomas J.; and Chu, Arthur S., to Allied Chemical Corporation. Fluid bed heat recovery apparatus. 4,158,036, Cl. 422-142.000.

Jalfre, Maurice: *See—*
Kaplan, Jean-Pierre; Raizon, Bernard M.; Obitz, Daniel C. L.; Manoury, Philippe M. J.; Najer, Henry; Jalfre, Maurice; and Giudicelli, Don P. R. L., 4,158,060, Cl. 424-274.000.

James, Rex L.: *See—*
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.

Jamison, Will B., to Consolidation Coal Company. Connecting apparatus for hingedly and slidably connecting an attachment to self-propelled mine vehicle. 4,157,878, Cl. 405-303.000.

Jaybee Manufacturing Corporation: *See—*
Holmes, Frank A., 4,157,599, Cl. 16-163.000.

Jenkins, Leonard E., Jr., to Honeywell Inc. Record spool holder. 4,158,205, Cl. 346-136.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Rostler, Peter S., 4,158,139, Cl. 250-423.00P.

Jessop, Edward T.; and Hanson, Robert C., to Tengam Company Limited. Magnetic device for treatment of calcareous liquids. 4,157,963, Cl. 210-222.000.

Jewett, David N., to Mobil Tyco Solar Energy Corporation. Method and apparatus for reducing residual stresses in crystals. 4,158,038, Cl. 422-249.000.

Joannes, Andre A. Prefabricated building panel. 4,157,640, Cl. 52-309.700.

John, Peter: *See*—
Graf, Werner; John, Peter; and Frey, Volker, 4,158,010, Cl. 260-448.20P.

John Zink Company: *See*—
Reed, Robert D., 4,157,890, Cl. 431-187.000.

Johnson, Clark E., Jr.; and Main, William F., to Buckeye International, Inc. Arrangement for recording images appearing on a cathode ray tube. 4,158,203, Cl. 346-35.000.

Jones, Don. Portable holder and height adjuster for electric warmer. 4,158,125, Cl. 219-433.000.

Jones, Lawrence T.: *See*—
Sims, Anson; and Jones, Lawrence T., 4,157,826, Cl. 272-53.200.

Jones, Philip E.: *See*—
Ostrozynski, Robert L.; Orfeo, Sabatino R.; Jones, Philip E.; and Lund, Earl A. E., 4,157,976, Cl. 252-67.000.

Jonsson, Sven A.: *See*—
Riede, Gerhard; Larsson, Lars-Ake L.; Andersson, Roland J. E.; and Jonsson, Sven A., 4,158,034, Cl. 422-36.000.

Jordan, Thomas F.; and Payne, Robert D., to Continental Group, Inc., The. Method and apparatus for power coating of three-piece cans. 4,158,071, Cl. 427-33.000.

Josephson, Larry H.: *See*—
Falterman, Charles W.; Bowen, James A.; and Josephson, Larry H., 4,157,928, Cl. 149-109.200.

Jureit, John C., to Automated Building Components, Inc. Lap-joint fastener. 4,157,676, Cl. 85-13.000.

K. J. Littlewood Pty. Ltd.: *See*—
Littlewood, Kenneth J., 4,157,824, Cl. 271-10.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Takahashi, Norio; and Ito, Teruo, 4,157,647, Cl. 58-85.500.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kasuya, Tamotsu, 4,157,881, Cl. 417-407.000.

Kachidurian, Adam, to Burroughs Corporation. Apparatus for forming mercury-filled capillary tubes. 4,157,909, Cl. 65-269.000.

Kaeding, Warren W.; and Young, Lewis B., to Mobil Oil Corporation. Selective production of para-xylene. 4,158,024, Cl. 585-467.000.

Kahle, Otto; and Reichow, Gunter. Strip seal for stuffing box packing. 4,157,835, Cl. 277-102.000.

Kahlow, Kurt J.; and Holbrook, Richard L., to Babcock & Wilcox Company, The. Tube forming process. 4,157,654, Cl. 72-367.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Murphy, James F.; and Woycheshin, Elias A., 4,157,911, Cl. 71-34.000.

Kaiser, Bernd-Ulrich: *See*—
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, 4,157,986, Cl. 252-432.000.

Kali-Chemie Pharma GmbH: *See*—
Thies, Peter W.; and David, Samuel, 4,158,061, Cl. 424-278.000.

Kamei, Kiyoo; Ikoma, Toshiaki; and Tokuda, Hirokuni, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing a field effect transistor. 4,157,610, Cl. 29-571.000.

Kanda, Masao; and Nakamura, Hiroaki, to Fuji Photo Film Co., Ltd. Separation and recovery apparatus for solid or liquid particles entrained in a flowing gas mixture. 4,157,903, Cl. 55-393.000.

Kansas State University Research Foundation: *See*—
Wen, Chin-Yung; and Fan, Liang-Tseng, 4,157,959, Cl. 210-20.000.

Kantner, Otto; and von Belvard, Peter R., to Vockenhuber, Karl; and Hauser, Raimund. Transport mechanism for sound cine camera or the like. 4,157,865, Cl. 352-27.000.

Kao, David T. Back and stroll carrier. 4,157,837, Cl. 280-30.000.

Kaplan, Jean-Pierre; Raizon, Bernard M.; Obitz, Daniel C. L.; Manoury, Philippe M. J.; Najer, Henry; Jalfre, Maurice; and Giudicelli, Don P. R. L., to Synthelabo. 2-Methoxy-benzamide derivatives. 4,158,060, Cl. 424-274.000.

Karlsson, Soren: *See*—
Berntsson, Leif; Hedberg, Bengt; Karlsson, Soren; and Magnusson, Olof, 4,157,998, Cl. 260-42.130.

Kartsounes, George T.; and Sather, Norman F., to United States of America, Energy. Combined compressed air storage-low BTU coal gasification power plant. 4,158,145, Cl. 290-52.000.

Kasai, Koichi: *See*—
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.

Kasuya, Tamotsu, to Kabushiki Kaisha Komatsu Seisakusho. Turbosupercharger. 4,157,881, Cl. 417-407.000.

Katou, Yoshito: *See*—
Fukuma, Nobuo; and Katou, Yoshito, 4,157,668, Cl. 74-798.000.

Kaule, Wittich: *See*—
Grottrup, Helmut; Kaule, Wittich; Maurer, Thomas; and Stenzel, Gerhard, 4,157,784, Cl. 235-491.000.

Kawneer Company, Inc.: *See*—
Coulston, Ellwin L., 4,157,634, Cl. 49-485.000.

Kaylico Corporation: *See*—
Bell, Robert L., 4,158,217, Cl. 361-283.000.

Keat, Paul P., to Norton Company. Ceramic bonded grinding tools with graphite in the bond. 4,157,897, Cl. 51-295.000.

Kelly, Vincent J., to Gerber Products Company. Stabilization of rice polish. 4,158,066, Cl. 426-419.000.

Kenyon, Norman D., to Post Office. Electrical filter networks. 4,158,184, Cl. 333-208.000.

Key, Robert T., Jr., to Motorola, Inc. X-Y Movable work holder. 4,157,818, Cl. 269-73.000.

Khasanov, Mukim M.: *See*—
Orlov, Petr N.; Khasanov, Mukim M.; Nedospasov, Vladimir G.; Peshkov, Valery A.; and Savelova, Alexandra A., 4,157,637, Cl. 51-133.000.

Khripov, Anatoly M.: *See*—
Danilin, Jury I.; Maringulov, Konstantin A.; Voronkov, Leonid A.; Mokeev, Mikhail N.; and Khripov, Anatoly M., 4,158,103, Cl. 174-68.500.

Kifferstein, Harry P.; and Kifferstein, Warren M. Toy flying saucer. 4,157,631, Cl. 46-74.00D.

Kifferstein, Warren M.: *See*—
Kifferstein, Harry P.; and Kifferstein, Warren M., 4,157,631, Cl. 46-74.00D.

Kikuchi, Masao: *See*—
Ogasawala, Nobuhiko; and Kikuchi, Masao, 4,157,702, Cl. 123-149.00C.

Kilb, Friedrich: *See*—
Koller, Bruno; and Kilb, Friedrich, 4,157,864, Cl. 351-160.00H.

King, John O., Jr. Filled breakneck fastener. 4,157,675, Cl. 85-5.00R.

Kissner, William R.: *See*—
Parkinson, Wayne K.; and Kissner, William R., 4,158,115, Cl. 200-5.00A.

Klein, Robert A.: *See*—
Betlejewski, Frank W.; and Klein, Robert A., 4,157,763, Cl. 220-94.00R.

Klompas, Nicholas, to General Electric Company. Turbine rotor tip water collector. 4,157,880, Cl. 415-115.000.

Kluender, Harold C., to Miles Laboratories, Inc. 3-Oxa carbinol prostaglandin analogs. 4,158,018, Cl. 260-586.00R.

Knoll, William C., to GTE Sylvania Incorporated. Electron ballast apparatus for gaseous discharge lamps. 4,158,156, Cl. 315-278.000.

Knutsen, Einar. Construction unit, such as quay, container or platform. 4,157,695, Cl. 114-267.000.

Kobori, Toshifumi: *See*—
Masuda, Akira; Enoki, Takahiro; and Kobori, Toshifumi, 4,157,743, Cl. 182-141.000.

Koenig, Robert B.: *See*—
McWaters, Lynn; and Koenig, Robert B., 4,158,194, Cl. 340-146.3SY.

Koestel, Leopold: *See*—
Schwind, Heinz F.; Titz, Annemarie; and Koestel, Leopold, 4,157,707, Cl. 126-386.000.

Koeth, Helmut; and Schollmeier, Gero, to Siemens Aktiengesellschaft. Adaptive corrector. 4,158,232, Cl. 364-724.000.

Koga, Shinichiro: *See*—
Takeda, Yoshiyuki; Koga, Shinichiro; and Fukuda, Yutaka, 4,158,009, Cl. 260-369.000.

Kohler, Ulrich: *See*—
Bertsch, Rudolf; Bolter, Bruno; Kohler, Ulrich; and Ritschel, Josef, 4,157,754, Cl. 206-83.500.

Kojima, Takashi: *See*—
Nagasaki, Hideo; Kojima, Takashi; and Shiro, Yoshinori, 4,158,000, Cl. 260-45.8NW.

Kolb, Erich: *See*—
Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, 4,157,666, Cl. 74-75.000.

Koller, Bruno; and Kilb, Friedrich. Contact lens eyeball centering support of soft material for use in conjunction with hard contact lens. 4,157,864, Cl. 351-160.00H.

Komaki, Shigeki: *See*—
Washizuka, Isamu; Hashimoto, Shintaro; Hashimoto, Sadakatsu; and Komaki, Shigeki, 4,158,230, Cl. 364-708.000.

Kono, Masahiro: *See*—
Iwao, Tetsuya; Kono, Masahiro; Sasaki, Heizo; and Ito, Akira, 4,158,088, Cl. 526-128.000.

Kopito, Louis: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,157,709, Cl. 128-759.000.

Koppel, Gary A.; and Cooper, Robin D. G., to Eli Lilly and Company. Process for antibiotic FR 1923 and related compounds. 4,158,004, Cl. 260-239.00A.

Koppers Company, Inc.: *See*—
Leston, Gerd, 4,158,101, Cl. 568-804.000.

Korytkowski, Henry M.: *See*—
Muster, Frank L.; Korytkowski, Henry M.; and Dear, Frederick H., 4,157,783, Cl. 235-379.000.

Kosasky, Harold: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,157,709, Cl. 128-759.000.

Koschel, Wulf H.: *See*—
Bishop, Stephen G.; McCombe, Bruce D.; and Koschel, Wulf H., 4,158,207, Cl. 357-18.000.

Kowalski, John A., to Textron Inc. Fastening element train and method and apparatus of manufacture. 4,157,603, Cl. 24-205.13R.

Kozlowski, George J., Jr., to Rudolph Beaver, Inc. Surgical blade package assembly. 4,157,758, Cl. 206-363.000.

Kozlowski, Peter F., to A. W. Chesterton Company. Sealing ring with diameter indicia. 4,157,833, Cl. 277-9.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Schabert, Hans-Peter; Irion, Leonhard; and Seidelberger, Hartmut, 4,157,939, Cl. 176-38.000.

Krakik, Andrew J., to Gould Inc. Means for breaking welds formed between circuit breaker contacts. 4,158,119, Cl. 200-240.000.

Krause, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for the transmission of electrical supply power. 4,158,144, Cl. 250-551.000.

Krautzberger, Franz: *See*—
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.

Kreyer, Lawrence; and Matherly, Thomas G., to Unilog Systems Corporation. Inverter apparatus. 4,158,224, Cl. 363-56.000.

Krieger, Charles: *See*—
Shultz, Walter; Sieger, George M.; and Krieger, Charles, 4,158,055, Cl. 424-241.000.

Kristensson, Nils L. O., to Landstingens inkopscentral LIC, Ekonomisk forening. Patient lift and transport apparatus. 4,157,593, Cl. 5-81.00R.

Krofta, Milos, to Lenox Institute for Research. Apparatus for deinking waste paper pulp. 4,157,952, Cl. 209-170.000.

Kroniger, Wilhelm; and Eyb, Wolfgang, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Motor vehicle wheel suspension arrangement. 4,157,840, Cl. 280-688.000.

Kronsbein, Dirk G., to Ultrafilter GmbH. Filters. 4,157,968, Cl. 210-489.000.

Kroyer, Karl K. K. Method of producing a mouldable material having a high content of a crystallizable glass. 4,157,907, Cl. 65-33.000.

Krueger, Keith T., to Gould Inc. Snap-on handle blocking device. 4,158,116, Cl. 200-42.00T.

Kubicek, Vladimir, to Sulzer Brothers Limited. Method of making a porous dimensionally stable heat-resistant and corrosion-resistant plate-like structure. 4,157,929, Cl. 156-89.000.

Kudara, Hajime: *See*—
Matsuda, Sumio; and Kudara, Hajime, 4,157,999, Cl. 260-42.210.

Kuhn, Friedrich: *See*—
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.

Kuhn, Lawrence; Myers, Robert A.; and Russo, Roy L., to International Business Machines Corporation. Time correction system for multi-nozzle ink jet printer. 4,158,204, Cl. 346-75.000.

Kuroda, Hitoshi: *See*—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; and Hamano, Hideaki, 4,157,944, Cl. 204-41.000.

Kuzma, John J., Jr.: *See*—
McDonough, John C.; Rary, James K.; Birth, Arden; and Kuzma, John J., Jr., 4,157,727, Cl. 157-13.000.

Kuznetsov, Vladimir A.: *See*—
Evdokimov, Valery N.; Zeldin, July R.; and Kuznetsov, Vladimir A., 4,158,128, Cl. 219-469.000.

Kwasiborski, Stanley, Jr.: *See*—
Sarosy, Edmund F.; and Kwasiborski, Stanley, Jr., 4,157,844, Cl. 292-48.000.

Laauwe, Robert H. Right-angle spray nozzle. 4,157,789, Cl. 239-327.000.

Labatt Breweries of Canada Limited: *See*—
Gough, Michael R., 4,157,755, Cl. 206-193.000.

Lacroix, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Level regulator governed by a pilot tone. 4,158,113, Cl. 179-170.00A.

Lahti, Jayne L.; and Hoff, Barbara A. Baby carriage accessory. 4,157,839, Cl. 280-642.000.

Landstingens inkopscentral LIC, Ekonomisk forening: *See*—
Kristensson, Nils L. O., 4,157,593, Cl. 5-81.00R.

Lane, George A.: *See*—
Brennan, Richard L.; and Lane, George A., 4,157,648, Cl. 60-205.000.

Larrabee, Edward W., to Union Carbide Corporation. Disposable, rotatable, star-shaped enclosure for use with blood washing apparatus. 4,157,780, Cl. 233-14.00R.

Larson, Ivar W.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
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Larsson, Lars-Ake L.: *See*—
Riede, Gerhard; Larsson, Lars-Ake L.; Andersson, Roland J. E.; and Jonsson, Sven A., 4,158,034, Cl. 422-36.000.

Lass, Yoram: *See*—
Yotam, Reuben; Lass, Yoram; and Caspi, Abraham, 4,157,711, Cl. 128-708.000.

Latiolais, Rene L.: *See*—
Williams, R. L.; Latiolais, Rene L.; Gabriel, John L.; and Bouis, Robert L., 4,157,847, Cl. 299-6.000.

Lau, Philip T. S., to Eastman Kodak Company. Silver halide emulsions containing yellow-dye-forming couplers. 4,157,919, Cl. 96-100.00R.

Le Material Telephonique: *See*—
Le Pabic, Jean-Pierre; and Moreau, Jean-Louis Y. C., 4,158,108, Cl. 179-15.0BS.

Lebrun, Amedee: *See*—
Moyaux, Alain G.; Amann, Gilbert J.; Lebrun, Amedee; Poupon, Michel; and Gorgeret, Gerard, 4,157,817, Cl. 266-222.000.

Le Carvennec, Francois: *See*—
Bricot, Claude; Le Carvennec, Francois; and Robin, Gerard, 4,157,931, Cl. 156-230.000.

Le Clerc, Bernard: *See*—
Archambault, Yves; Epsztein, Bernard; and Le Clerc, Bernard, 4,158,177, Cl. 330-4.600.

Leclercq, Phillippe, to Produits Chimiques Ugine Kuhlmann. Processes for conversion of sulfurous anhydride to sulfuric anhydride and vice versa with a Fe, Cu, alkali metal containing catalyst. 4,158,048, Cl. 423-533.000.

Lederer, Edgar: *See*—
Audibert, Francoise; Chedid, Louis; Lefrancier, Pierre; Choay, Jean; and Lederer, Edgar, 4,158,052, Cl. 424-45.000.

Lee, Billy R., to B.R. Lee Industries, Inc. Apparatus for compacting subgrade and pavement materials. 4,157,877, Cl. 404-128.000.

Leeds and Micallef: *See*—
Micallef, Lewis A., 4,157,774, Cl. 222-321.000.

Lefrancier, Pierre: *See*—
Audibert, Francoise; Chedid, Louis; Lefrancier, Pierre; Choay, Jean; and Lederer, Edgar, 4,158,052, Cl. 424-45.000.

Legille, Edouard, to S.A. des Anciens Etablissements Paul Wurth. Shaft furnace cooling. 4,157,816, Cl. 266-194.000.

Lenox Institute for Research: *See*—
Krofta, Milos, 4,157,952, Cl. 209-170.000.

Lenox Machine Company, Inc.: *See*—
Frye, Kenneth G., 4,157,672, Cl. 83-500.000.

Le Pabic, Jean-Pierre; and Moreau, Jean-Louis Y. C., to Le Material Telephonique. Digital data resynchronization device. 4,158,108, Cl. 179-15.0BS.

Leroy, Pierre J.; and Sprunck, Emile, to Creusot-Loire. Process for protecting a metallurgical tuyere against wear while minimizing the amount of liquid cooling agent supplied thereto. 4,157,813, Cl. 266-47.000.

Leston, Gerd, to Koppers Company, Inc. Process for the methylation of phenolic compounds. 4,158,101, Cl. 568-804.000.

Levine, Peter A., to RCA Corporation. CCD comb filters. 4,158,209, Cl. 358-31.000.

Levy, Michael, to Lexicon Corporation. Electronic dictionary and language interpreter. 4,158,236, Cl. 364-900.000.

Lewicki, Walter J., Jr.; and McQuate, William M., to Armstrong Cork Company. Selective cooling of sheet to be embossed. 4,158,070, Cl. 427-8.000.

Lewis, James D.; and Lowy, John A., to International Business Machines Corporation. Method and system for data conversion. 4,158,240, Cl. 365-189.000.

Lewis, James R.: *See*—
Coggins, Sherrill B.; Lewis, James R.; and Speas, Orlice A., 4,157,651, Cl. 66-147.000.

Lexicon Corporation: *See*—
Levy, Michael, 4,158,236, Cl. 364-900.000.

Li, Hsin L.: *See*—
Oswald, Hendrikus J.; Li, Hsin L.; Butler, Russell H.; and Liland, Alfred L., 4,157,604, Cl. 28-221.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Nutz, Karl-Diether, 4,158,164, Cl. 323-24.000.

Liechti, Peter: *See*—
Siegrist, Adolf E.; Liechti, Peter; Meyer, Hans R.; and Weber, Kurt, 4,158,099, Cl. 568-635.000.

Lien, Yeong-Chung E.: *See*—
Woo, John, Jr.; and Lien, Yeong-Chung E., 4,158,229, Cl. 364-562.000.

Liland, Alfred L.: *See*—
Oswald, Hendrikus J.; Li, Hsin L.; Butler, Russell H.; and Liland, Alfred L., 4,157,604, Cl. 28-221.000.

Lin, Chung-Jeno. Foldable support for machine tool. 4,157,798, Cl. 248-647.000.

Lindner, Robert A.; and Smolin, Edwin M., to Henkel Inc. Lubricating and anti-tack compositions useful in the shaping of thermoplastics containing mixed esters and esters of C_{32-72} monoalcohols with C_{18-72} monoacids. 4,157,990, Cl. 252-56.00S.

Lindsay, Robert A.: *See*—
Cerbone, Ralph L.; Lindsay, Robert A.; Noonan, John M.; and Rudroff, Martin G., 4,158,112, Cl. 179-99.00A.

Linhart, Hans-Joachim: *See*—
Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, 4,157,666, Cl. 74-75.000.

Lippacher, Wolfgang: *See*—
Deutschenbaur, Paul; and Lippacher, Wolfgang, 4,157,677, Cl. 85-68.000.

Lis, Andrzej: *See*—
Tuznik, Franciszek; and Lis, Andrzej, 4,157,942, Cl. 204-35.00R.

Littlewood, Kenneth J., to K. J. Littlewood Pty. Ltd. Fabric work piece separator. 4,157,824, Cl. 271-10.000.

Llenado, Ramon A., to Procter & Gamble Company, The. Modified silicates. 4,157,978, Cl. 252-135.000.

Loew, Harold F., to Akzona Incorporated. Yarn tangling device. 4,157,606, Cl. 28-271.000.

Login, Robert B., to BASF Wyandotte Corporation. Fibrous article sized with a branched water-dispersible polyester. 4,158,083, Cl. 428-389.000.

Loshaek, Samuel; and Shen, Chah Moh, to Wesley-Jessen Inc. Contact lenses of high water content. 4,158,089, Cl. 526-264.000.

Louisville Bedding Company: *See*—
Forrester, Harold C., 4,157,688, Cl. 112-132.000.

Love, Gordon R.: *See—*
McLaurin, Eugene D.; Hucks, William E.; and Love, Gordon R., 4,158,218, Cl. 361-308.000.

Lowy, John A.: *See—*
Lewis, James D.; and Lowy, John A., 4,158,240, Cl. 365-189.000.

Lucia, Jack S., to Independent Machine Company. Bobbin winding system. 4,157,793, Cl. 242-35.50R.

Luck, Erich: *See—*
Von Rymon Lipinski, Gert-Wolfhard; and Luck, Erich, 4,158,068, Cl. 426-548.000.

Lueschen, William J.: *See—*
Baturay, Susan E.; Dzury, Daniel S.; and Lueschen, William J., 4,157,921, Cl. 134-4.000.

Luik, Manfred. Cleaning apparatus, especially for dentures. 4,157,922, Cl. 134-58.00R.

Luke, George M.: *See—*
Crenshaw, Ronnie R.; and Luke, George M., 4,158,013, Cl. 260-551.00C.

Lund, Earl A. E.: *See—*
Ostrozynski, Robert L.; Orfeo, Sabatino R.; Jones, Philip E.; and Lund, Earl A. E., 4,157,976, Cl. 252-67.000.

Lund, Kenneth; and Bleasdale, Barrie, to Edgar Pickering (Blackburn) Limited. Needle bar for a tufting machine. 4,157,690, Cl. 112-226.000.

Lundberg, Robert D.; and Phillips, Robert R., to Exxon Research & Engineering Co. Elastomeric blend compositions having improved weathering stability. 4,157,992, Cl. 260-23.50A.

Lundgren, Bror F.: *See—*
Akesson, Yngve R.; and Lundgren, Bror F., 4,157,681, Cl. 99-538.000.

Lundqvist, Karl G. Hand tools. 4,157,616, Cl. 30-153.000.

Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W., to AM International, Inc. Ink and moisture control system with run-length compensation. 4,157,682, Cl. 101-148.000.

Mack, Raymond S. Fishing rod holder. 4,157,803, Cl. 248-512.000.

Magnusson, Olof: *See—*
Berntsson, Leif; Hedberg, Bengt; Karlsson, Soren; and Magnusson, Olof, 4,157,998, Cl. 260-42.130.

Main, William F.: *See—*
Johnson, Clark E., Jr.; and Main, William F., 4,158,203, Cl. 346-35.000.

Mainetti, Mario, to Mainetti S.A. Clothes hanger. 4,157,782, Cl. 223-96.000.

Mainetti S.A.: *See—*
Mainetti, Mario, 4,157,782, Cl. 223-96.000.

Makino, Naoji: *See—*
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,158,075, Cl. 427-220.000.

Malagari, Frank A., Jr.; Miller, Robert F.; Shilling, Jack W.; and Wells, James H., to Allegheny Ludlum Industries, Inc. Texture annealing silicon steel. 4,157,925, Cl. 148-111.000.

Manoury, Philippe M. J.: *See—*
Kaplan, Jean-Pierre; Raizon, Bernard M.; Obitz, Daniel C. L.; Manoury, Philippe M. J.; Najer, Henry; Jalfre, Maurice; and Giudicelli, Don P. R. L., 4,158,060, Cl. 424-274.000.

Mansei Kogyo Kabushiki Kaisha: *See—*
Moriya, Nobuyoshi, 4,157,891, Cl. 431-344.000.

Marcatili, Enrique A. J., to Bell Telephone Laboratories, Incorporated. Dual polarization electromagnetic switch and modulator. 4,157,860, Cl. 350-96.140.

Marconi Company Limited, The: *See—*
Quilliam, Robert M.; Gailantree, Howitt R.; and Watt, Andrew J., 4,158,117, Cl. 200-181.000.

Mares, Pedro. Process and apparatus for forming compound structure of various plastic materials in mold having apertured slide plate. 4,157,883, Cl. 425-127.000.

Margraf, Adolf. Tube filters. 4,157,900, Cl. 55-294.000.

Marine Aluminum Aanensen & Co. A/S: *See—*
Aanensen, Oscar, 4,157,742, Cl. 182-97.000.

Maringulov, Konstantin A.: *See—*
Danilin, Jury I.; Maringulov, Konstantin A.; Voronkov, Leonid A.; Mokeev, Mikhail N.; and Khripov, Anatoly M., 4,158,103, Cl. 174-68.500.

Marouby, Guy, to Societe Anonyme D.B.A. Electronic antiskid control device. 4,157,850, Cl. 303-109.000.

Marshall, David E.: *See—*
Ihlenfeldt, Eugene T.; and Marshall, David E., 4,157,663, Cl. 73-361.000.

Martignoni, Pasquale: *See—*
Chew, William M.; Murfree, James A.; Martignoni, Pasquale; Nappier, Henry A.; and Ayers, Orval E., 4,157,927, Cl. 149-22.000.

Martin, Rolf; Roth, Norbert; and Froese-Peeck, Ruediger, to Siemens Aktiengesellschaft. Method and apparatus for automatically recognizing faults in the surface of the dimensions of an object. 4,158,134, Cl. 250-216.000.

Maruyama, Hitoshi. Self balancing centrifuge. 4,157,781, Cl. 233-23.00A.

Mason, Roy G., to Anderson Jacobson, Inc. Telephone handset acoustic coupling cup. 4,158,106, Cl. 179-2.00C.

Masuda, Akira; Enoki, Takahiro; and Kobori, Toshifumi, to Nisso Sangyo Co. Ltd. Working base elevating apparatus. 4,157,743, Cl. 182-141.000.

Masuda, Mitsuya; Yamamoto, Keisuke; and Yamaguchi, Namio, to Matsushita Electric Industrial Co., Ltd. Automatic frequency control apparatus for television receiver. 4,158,211, Cl. 358-195.000.

Matherly, Thomas G.: *See—*
Kreyer, Lawrence; and Matherly, Thomas G., 4,158,224, Cl. 363-56.000.

Mathes, Donald R.; and Navarro, Ramon M. Continuous, random dyeing apparatus for carpet or the like. 4,157,652, Cl. 68-22.00B.

Matsuda, Sumio; and Kudara, Hajime, to Chugoku Marine Paints Ltd. Anti-fouling paint composition. 4,157,999, Cl. 260-42.210.

Matsumoto, Hiroshi: *See—*
Uchiyama, Toshimitsu; Hasegawa, Minoru; Ootsuka, Tatsuo; and Matsumoto, Hiroshi, 4,158,074, Cl. 427-214.000.

Matsushima, Noriaki: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inoue, Naomitsu, 4,157,993, Cl. 260-28.00P.

Matsushita Electric Industrial Co., Ltd.: *See—*
Masuda, Mitsuya; Yamamoto, Keisuke; and Yamaguchi, Namio, 4,158,211, Cl. 358-195.000.
Watanabe, Masanori; Nonomura, Kinzo; and Fukai, Masakazu, 4,158,210, Cl. 358-56.000.

Matsuzawa, Toshihiko: *See—*
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,158,075, Cl. 427-220.000.

Maurer, Helmut, to Robert Bosch GmbH. Oxygen sensor to determine the oxygen content in gases. 4,157,948, Cl. 204-195.00S.

Maurer, Thomas: *See—*
Grottrup, Helmut; Kaule, Wittich; Maurer, Thomas; and Stenzel, Gerhard, 4,157,784, Cl. 235-491.000.

Mawardi, Osman K. Magnetic separation of iron pyrite from coal. 4,157,953, Cl. 209-213.000.

May & Baker Limited: *See—*
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., 4,158,062, Cl. 424-331.000.

May, William G., Jr., to Burleigh Instruments, Inc. Rigid thermally stable structure for supporting precision devices. 4,157,802, Cl. 248-346.000.

Mayoux, Christian: *See—*
Barge, Jean; Catte, Raymond; Chapelet, Gilbert; Bui, Ai; Dejean, Pierre; Huraux, Claude; and Mayoux, Christian, 4,157,975, Cl. 252-63.500.

Mays, Robert K.: *See—*
Wason, Satish K.; and Mays, Robert K., 4,157,920, Cl. 106-292.000.

McCluskey, John R. Aperture forming devices. 4,157,807, Cl. 249-177.000.

McCombe, Bruce D.: *See—*
Bishop, Stephen G.; McCombe, Bruce D.; and Koschel, Wulf H., 4,158,207, Cl. 357-18.000.

McDonough, John C.; Rary, James K.; Birth, Arden; and Kuzma, John J., Jr., to Bandag, Incorporated. Apparatus for recapping tires. 4,157,727, Cl. 157-13.000.

McEwen, James: *See—*
Scarpellino, Anthony J., Jr.; McEwen, James; and Borner, William G., 4,157,943, Cl. 204-37.00R.

McGill, Charles K.: *See—*
Bailey, Thomas D.; and McGill, Charles K., 4,158,093, Cl. 542-455.000.

McLaurin, Eugene D.; Hucks, William E.; and Love, Gordon R., to Union Carbide Corporation. Ceramic capacitor device. 4,158,218, Cl. 361-308.000.

McQuate, William M.: *See—*
Lewicki, Walter J., Jr.; and McQuate, William M., 4,158,070, Cl. 427-8.000.

McWaters, Lynn; and Koenig, Robert B., to Recognition Equipment Incorporated. Optical recognition system. 4,158,194, Cl. 340-146.3SY.

Medina, Conrad R.: *See—*
Villwock, George F.; and Medina, Conrad R., 4,157,778, Cl. 227-8.000.

Mego Corp.: *See—*
Reiner, Lawrence; and Hennig, Michael, 4,157,633, Cl. 46-116.000.

Meier, James A.: *See—*
Totty, Stuart M.; and Meier, James A., 4,157,994, Cl. 260-29.4UA.

Meiller, Hermann, to Grammer, Willibald. Driver's seat with automatic weight adjustment. 4,158,160, Cl. 318-467.000.

Meister, Douglas L. Yarn winder. 4,157,791, Cl. 242-2.000.

Menke, Josef F., to Elektro-Optik GmbH & Co K.G. Method of and thermograph for producing and displaying thermographic pictures. 4,158,137, Cl. 250-332.000.

Menzel, Tankred: *See—*
Reuter, Franz G.; and Menzel, Tankred, 4,158,031, Cl. 521-57.000.

Merger, Franz; and Segnitz, Adolph, to BASF Aktiengesellschaft. Preparation of 1,3-diamino-2,2-dimethyl-propane. 4,158,017, Cl. 260-585.00B.

Merkle, Heinz: *See—*
Gruenberger, Gerhard; Merkle, Heinz; and Sunkler, Anton, 4,158,174, Cl. 325-404.000.

Metz, Robert L.: *See—*
Baxter, William D.; and Metz, Robert L., 4,158,227, Cl. 364-200.000.

Meuschel, Dieter, to Heidelberger Druckmachinen. Clamping means for workpieces. 4,157,820, Cl. 269-319.000.

Meyer, Hans R.: *See—*
Siegrist, Adolf E.; Liechti, Peter; Meyer, Hans R.; and Weber, Kurt, 4,158,099, Cl. 568-635.000.

Meyer, Karl, to Hoffmann-La Roche Inc. Methylglyoxal dimethyl acetal production. 4,158,019, Cl. 260-594.000.

Meyer, Richard W. Adjustable work piece clamping system. 4,157,819, Cl. 269-231.000.

Meyst, Richard P.; and Porten, Ronald M., to Baxter Travenol Laboratories, Inc. Blood filter. 4,157,967, Cl. 210-449.000.
Micallef, Lewis A., to Leeds and Micallef. Dispensing pump with trigger actuator. 4,157,774, Cl. 222-321.000.
Migita Patent Office: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; and Hamano, Hideaki, 4,157,944, Cl. 204-41.000.
Milberger, Ernest C.: *See—*
Dolhyj, Serge R.; and Milberger, Ernest C., 4,157,987, Cl. 252-437.000.
Miles Laboratories, Inc.: *See—*
Kluender, Harold C., 4,158,018, Cl. 260-586.00R.
Miller, Louis E. Cutting attachment for welding torches. 4,157,814, Cl. 266-70.000.
Miller, Myrl J., to International Business Machines Corporation. Document feeder with recirculation and unloading. 4,157,822, Cl. 271-3.100.
Miller, Robert F.: *See—*
Malagari, Frank A., Jr.; Miller, Robert F.; Shilling, Jack W.; and Wells, James H., 4,157,925, Cl. 148-111.000.
Milltronics Limited: *See—*
Schindel, Milton R., 4,157,661, Cl. 73-228.000.
Milpak Incorporated: *See—*
Schwartz, Burton, 4,157,787, Cl. 239-56.000.
Mineral Deposits Limited: *See—*
Giffard, Philip J., 4,157,957, Cl. 209-493.000.
Minolta Camera Kabushiki Kaisha: *See—*
Imura, Kenji, 4,157,708, Cl. 128-666.000.
Mio, Takeshi: *See—*
Tanaka, Kyoichi; Mio, Takeshi; Takahashi, Kozo; and Yoshikawa, Toshiharu, 4,157,892, Cl. 8-14.000.
Miraldi, Peter T., to American Sterilizer Company. Rapid sterilization evaluator and test apparatus. 4,158,040, Cl. 422-297.000.
Mischutin, Vladimir, to White Chemical Corporation. Flame retardants for synthetic materials (I). 4,158,077, Cl. 427-381.000.
Misterfeld, Frederick O. R.: *See—*
Orris, Stephen J.; and Misterfeld, Frederick O. R., 4,158,159, Cl. 318-443.000.
Mitamura, Ryota; and Itoh, Tadanao, to Showa Denko Kabushiki Kaisha. Process for direct chill casting of metals. 4,157,728, Cl. 164-4.000.
Mitchell, Marvin: *See—*
Finlay, Carole A.; and Mitchell, Marvin, 4,157,895, Cl. 23-230.00B.
Mitsubishi Chemical Industries Ltd.: *See—*
Takeda, Yoshiyuki; Koga, Shinichiro; and Fukuda, Yutaka, 4,158,009, Cl. 260-369.000.
Mitsui Petrochemical Industries Ltd.: *See—*
Takabatake, Masaharu; and Tarui, Haruo, 4,158,044, Cl. 423-235.000.
Mitsui Shipbuilding and Engineering Co.: *See—*
Takabatake, Masaharu; and Tarui, Haruo, 4,158,044, Cl. 423-235.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Iwao, Tetsuya; Kono, Masahiro; Sasaki, Heizo; and Ito, Akira, 4,158,088, Cl. 526-128.000.
Miyaji, Kenichi: *See—*
Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, 4,157,779, Cl. 228-176.000.
Mobil Oil Corporation: *See—*
Frilette, Vincent J.; and Rubin, Mae K., 4,157,950, Cl. 208-135.000.
Kaeding, Warren W.; and Young, Lewis B., 4,158,024, Cl. 585-467.000.
Paul, Jill H., 4,158,015, Cl. 260-566.00A.
Mobil Tyco Solar Energy Corporation: *See—*
Jewett, David N., 4,158,038, Cl. 422-249.000.
Mokeev, Mikhail N.: *See—*
Danilin, Jury I.; Maringulov, Konstantin A.; Voronkov, Leonid A.; Mokeev, Mikhail N.; and Khripov, Anatoly M., 4,158,103, Cl. 174-68.500.
Moller, Jens L., to Continental Group, Inc., The. Easy open beverage can—non-detach. 4,157,764, Cl. 220-260.000.
Monsanto Company: *See—*
Chang, Richard C.; and Ward, Robert R., 4,157,960, Cl. 210-23.00R.
Clemons, E. Dale; and Daust, John T., 4,157,982, Cl. 252-311.000.
Ingram, Woodrow H., II, 4,157,937, Cl. 162-135.000.
Montillier, Jean P., to Pitney-Bowes, Inc. Copolymer compositions and method of preparation. 4,157,973, Cl. 252-62.10L.
Moreau, Jean-Louis Y. C.: *See—*
Le Pabic, Jean-Pierre; and Moreau, Jean-Louis Y. C., 4,158,108, Cl. 179-15.0BS.
Morgan, Edward T.: *See—*
Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W., 4,157,682, Cl. 101-148.000.
Morgan, John R.: *See—*
Donakowski, William A.; and Morgan, John R., 4,157,941, Cl. 204-33.000.
Mori, Yasunori, to Hitachi, Ltd. Method and apparatus for controlling spark timing of internal combustion engine. 4,157,699, Cl. 123-117.00D.
Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaisha. Fuel flow adjusting device for use in gas-fueled lighters. 4,157,891, Cl. 431-344.000.
Morris, Paul W.: *See—*
Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., 4,157,655, Cl. 73-12.000.
Morrow, Gordon F., to D. A. Griffin Corp. Apparatus for inserting a rotor into a stator. 4,157,613, Cl. 29-732.000.
Morton, Kenneth O., to Cluett, Peabody & Co., Inc. Method and means for transporting and orienting limp plys of fabric or the like. 4,157,823, Cl. 271-10.000.
Morton-Norwich Products, Inc.: *See—*
Britt, William J., 4,157,768, Cl. 222-42.000.
Morton, Wendell J.: *See—*
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Mosier, Jacques: *See—*
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Motorola, Inc.: *See—*
Dattilo, Donald J., 4,158,212, Cl. 360-109.000.
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Moyaux, Alain G.; Amann, Gilbert J.; Lebrun, Amedee; Poupon, Michel; and Gorgeret, Gerard, to Union Siderurgique du Nord et de l'est de la France. Converter. 4,157,817, Cl. 266-222.000.
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Hager, Walter; and Muller, Richard, 4,157,686, Cl. 112-121.120.
Murdock, Douglas B., to Resource Control Corporation. Oil well instrumentation system. 4,157,659, Cl. 73-151.000.
Murfree, James A.: *See—*
Chew, William M.; Murfree, James A.; Martignoni, Pasquale; Nappier, Henry A.; and Ayers, Orval E., 4,157,927, Cl. 149-22.000.
Murphy, James F.; and Woycheshin, Elias A., to Kaiser Aluminum & Chemical Corporation. Decarbonization of ammonium polyphosphate fertilizer solutions. 4,157,911, Cl. 71-34.000.
Musser, Harry R., to Eastman Kodak Company. 4-(Hydrazonomethyl)-benzoic acid hydrazide. 4,158,014, Cl. 260-558.00H.
Muster, Frank L.; Korytkowski, Henry M.; and Dear, Frederick H., to Burroughs Corporation. Item responsive print inhibiting apparatus. 4,157,783, Cl. 235-379.000.
Muto, Masahito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Releasing device for an automatic fixed speed driving system. 4,158,192, Cl. 340-62.000.
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Kuhn, Lawrence; Myers, Robert A.; and Russo, Roy L., 4,158,204, Cl. 346-75.000.
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Nagarajan, Ramakrishnan, to Eli Lilly and Company. Antiviral method. 4,158,056, Cl. 424-251.000.
Nagasaki, Hideo; Kojima, Takashi; and Shiro, Yoshinori, to Sumitomo Chemical Company, Limited. Antidegradants for rubber. 4,158,000, Cl. 260-45.8NW.
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Nakasuji, Mamoru, to Tokyo Shibaura Electric Co., Ltd. Electron beam exposure apparatus. 4,158,140, Cl. 250-492.00A.
Nappier, Henry A.: *See—*
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Navarro, Ramon M.: *See—*
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Nedospasov, Vladimir G.: *See—*
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Needleman, Samuel. Photographic processing tray. 4,157,868, Cl. 354-307.000.

Neher, Hans. Water collecting device for an animals watering valve. 4,157,697, Cl. 119-75.000.

Neilson, John M. S., to RCA Corporation. Semiconductor device. 4,158,206, Cl. 357-13.000.

Nelson, Carl D., to J. I. Case Company. Park-lock mechanism for a vehicle transmission. 4,157,745, Cl. 188-31.000.

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Goldberg, Viktor, 4,157,717, Cl. 128-227.000.

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New, George W., to Tioxide Group Limited. Series reactor. 4,158,123, Cl. 219-121.00P.

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Sawai, Suezo, 4,157,630, Cl. 46-3.000.

Nicholas, David C., to Rockwell International Corporation. Integral frame slip circuit. 4,158,107, Cl. 179-15.0AF.

Nippon Electric Company, Ltd.: *See*—
Otani, Susumu; and Noguchi, Toshitake, 4,158,105, Cl. 178-69.100.

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Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, 4,157,779, Cl. 228-176.000.

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Tojo, Akio; Ohnishi, Kimimasa; Hosono, Isamu; and Ogawa, Mikiyoshi, 4,157,722, Cl. 139-450.000.
Toyomaki, Kazuya, 4,158,175, Cl. 325-420.000.

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Masuda, Akira; Enoki, Takahiro; and Kobori, Toshifumi, 4,157,743, Cl. 182-141.000.

Niznik, George E., to General Electric Company. Dihydrooxadiazinones and method for making. 4,158,094, Cl. 544-68.000.

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Bridoux, Edouard; Bruneel, Christian D.; Torguet, Roger J.; and Nongaillard, Bertrand, 4,157,665, Cl. 73-607.000.

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Norris, Alan H., to WWG Industries, Inc. Printing system. 4,157,683, Cl. 101-211.000.

Norton Company: *See*—
Keat, Paul P., 4,157,897, Cl. 51-295.000.

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Nuclear International Corporation: *See*—
Finlay, Carole A.; and Mitchell, Marvin, 4,157,895, Cl. 23-230.00B.

Nutz, Karl-Diether, to Licentia Patent-Verwaltungs-G.m.b.H. Phase control of power to a load using a single capacitor. 4,158,164, Cl. 323-24.000.

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Ewers, Ronald L.; and Oakley, John L., 4,157,733, Cl. 169-24.000.

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Podola, Nikolai V.; Obolonsky, Alexei P.; and Tsokol, Evgeny L., 4,158,122, Cl. 219-121.0EB.

Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for evaluation of fitness of a motor vehicle operator to performance of a predetermined motor ability test. 4,158,198, Cl. 340-576.000.

O'Dell, Kenneth A., to Electronics Diversified, Inc. Lighting-control system with cue-level confirmation. 4,158,132, Cl. 250-205.000.

Oder, Robin R., to J. M. Huber Corporation. Method for improving production rates during benefication of particle dispersions. 4,157,954, Cl. 209-214.000.

Ogasawala, Nobuhiko; and Kikuchi, Masao, to Hitachi, Ltd. Automatic ignition timing advancing device in ignition system. 4,157,702, Cl. 123-149.00C.

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Hamaoka, Tsutomu; Ogawa, Junkichi; and Shimamura, Isao, 4,157,915, Cl. 96-55.000.

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Ohzeki, Jurou: *See*—
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Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, to Ricoh Co., Ltd. Derivatives of 1,3,4-oxadiazole and electrophotographic elements containing same. 4,157,913, Cl. 96-1.50R.

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Okuma, Tatsuhiko: *See*—
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Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., to Hewlett-Packard Company. Programmable calculator including alphanumeric error display means. 4,158,228, Cl. 364-200.000.

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Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., to Hewlett-Packard Company. Programmable calculator including means for performing implied multiply operations. 4,158,233, Cl. 364-754.000.

Olsson, Nils O.; and Flood, William, to International Harvester Company. Endwise transport structure for drills. 4,157,735, Cl. 172-240.000.

Ootsuka, Tatsuo: *See*—
Uchiyama, Toshimitsu; Hasegawa, Minoru; Ootsuka, Tatsuo; and Matsumoto, Hiroshi, 4,158,074, Cl. 427-214.000.

Opelika Manufacturing Corp.: *See*—
Brocklehurst, Charles E.; and Burton, Perry E., 4,157,692, Cl. 112-262.300.

Openchowski, Richard A.; and Bronec, Joseph A., to National Can Corporation. Seamless drawn and ironed container with opening means and method and apparatus for forming the same. 4,157,693, Cl. 113-120.00H.

Orfeo, Sabatino R.: *See*—
Ostrozynski, Robert L.; Orfeo, Sabatino R.; Jones, Philip E.; and Lund, Earl A. E., 4,157,976, Cl. 252-67.000.

Orlov, Petr N.; Khasanov, Mukim M.; Nedospasov, Vladimir G.; Peshkov, Valery A.; and Savelova, Alexandra A., to Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana. Planetary-type lapping machine for lapping a group of workpieces. 4,157,637, Cl. 51-133.000.

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Jaffe, James; O'Rourke, Thomas J.; and Chu, Arthur S., 4,158,036, Cl. 422-142.000.

Orris, Stephen J.; and Misterfeld, Frederick O. R., to Chrysler Corporation. Electronic circuit controller for windshield wiper drive motor. 4,158,159, Cl. 318-443.000.

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Campbell, Roy E.; and Wilkinson, John D., 4,157,904, Cl. 62-27.000.

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Oswald, Hendrikus J.; Li, Hsin L.; Butler, Russell H.; and Liland, Alfred L., to Allied Chemical Corporation. Method of high speed yarn texturing. 4,157,604, Cl. 28-221.000.

Otani, Susumu; and Noguchi, Toshitake, to Nippon Electric Company, Ltd. Clock extraction device for double-binary phase-shift keying system. 4,158,105, Cl. 178-69.100.

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Outboard Marine Corporation: *See*—
Hines, Charles E., 4,157,734, Cl. 172-22.000.

Outokumpu, Oy: *See*—
Hyvarinen, Olli V. J., 4,157,946, Cl. 204-108.000.

Ovutime, Inc.: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,157,709, Cl. 128-759.000.

Pacific Handy Cutter Inc.: *See*—
Elmer, Frederick L., 4,157,801, Cl. 248-97.000.

Park, Moon C. Beneficiation apparatus. 4,157,951, Cl. 209-159.000.

Park, Sang M.: *See*—
Payne, David A.; and Park, Sang M., 4,158,219, Cl. 361-321.000.

Parker, Ernest G.: *See*—
Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., 4,157,912, Cl. 75-101.00R.

Parker, Marshall M.: *See*—
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, G. Irvin, 4,158,200, Cl. 340-750.000.

Parkinson, Wayne K.; and Kissner, William R., to W. H. Brady Co. Internally connecting flexible switch. 4,158,115, Cl. 200-5.00A.

Parks, James R., to Romans, Ralph H. Insect trap. 4,157,629, Cl. 43-113.000.

Patton, Robert J.; and Sentementes, Thomas J., to GTE Sylvania Incorporated. Apparatus and method for producing filaments. 4,157,729, Cl. 164-87.000.

Paul, James L.: *See*—
Stautzenberger, Adin L.; Paul, James L.; and Unruh, Jerry D., 4,158,020, Cl. 260-604.0HF.

Paul, Jill H., to Mobil Oil Corporation. Process for the stereoselective synthesis of the E isomer of aryl alkyl oximes. 4,158,015, Cl. 260-566.00A.

Pawlowski, Eugene J. Electric and air signal element. 4,158,120, Cl. 200-330.000.

Payne, David A.; and Park, Sang M., to University of Illinois Foundation. Heterophasic ceramic capacitor. 4,158,219, Cl. 361-321.000.

Payne, Robert D.: *See*—
Jordan, Thomas F.; and Payne, Robert D., 4,158,071, Cl. 427-33.000.

Pelley, Ronald P.; and Warren, Kenneth S., to Edna McConnell Clark Foundation. Antigen fraction of *Schistosoma mansoni* eggs suitable for testing for schistosomiasis. 4,158,049, Cl. 424-1.000.

Pennell, Phillip E., to Gates Rubber Company, The. Locking cable. 4,157,602, Cl. 24-73.00A.

Penzien, Klaus: *See*—
Hagen, Helmut; Naarmann, Herbert; and Penzien, Klaus, 4,158,086, Cl. 521-90.000.
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Perreault, Richard J., to Gould Inc. Means for affixing ferrules to a fuse casing. 4,158,187, Cl. 337-248.000.

Persson, Torsten B. Method and an apparatus for distributing a disintegrated material onto a layer forming surface. 4,157,724, Cl. 141-1.000.

Peshkov, Valery A.: *See*—
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Pessel, Leopold, to American Electronic Laboratories, Inc. Method and composition for removing sulfur dioxide from flue gases. 4,157,988, Cl. 252-440.000.

Petracci, Bernardo. Mechanic device for the automatic control, at two speeds, of winches of pile-drivers. 4,157,737, Cl. 173-81.000.

Pfaff Industriemaschinen GmbH: *See*—
Ellenberger, Bernd; Seelinger, Wolfgang; and Wauer, Gerd, 4,157,825, Cl. 271-10.000.
Hager, Walter; and Muller, Richard, 4,157,686, Cl. 112-121.120.

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Philberth, Karl; and Philberth, Bernhard, 4,158,186, Cl. 336-217.000.

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Philippe, Pierre D. P.: *See*—
Bolus, Daniel M. A. F.; Chevillon, Jean-Pierre; Comte, Jean-Charles; and Philippe, Pierre D. P., 4,158,214, Cl. 361-91.000.

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Trepka, William J., 4,158,098, Cl. 568-633.000.
Walters, Harold C., 4,157,979, Cl. 252-162.000.

Phillips, Robert R.: *See*—
Lundberg, Robert D.; and Phillips, Robert R., 4,157,992, Cl. 260-23.50A.

Piazza, John R., to Western Electric Company, Inc. Method of rendering an ink strippable. 4,157,936, Cl. 156-659.000.

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Pilla, Gabriel J., to United States of America, Navy. Corrosion preventive composition. 4,157,991, Cl. 260-22.00S.

Pingault, Francois: *See*—
Stevels, Albert L. N.; Schrama-de Pauw, Agnes D. M.; and Pingault, Francois, 4,157,981, Cl. 252-301.40H.

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Weitz, Hans-Martin; Hartig, Juergen; and Platz, Rolf, 4,158,008, Cl. 260-348.160.

Plozner, Lisio, to B.P.T. S.p.A. Piezoelectric spark generator, particularly for gas igniters. 4,158,215, Cl. 361-260.000.

Podola, Nikolai V.; Obolonsky, Alexei P.; and Tsokol, Evgeny L. Method of measuring and stabilizing the diameter of heating point on workpiece in electron beam welding machine and on automatic device for realizatiCn thereof. 4,158,122, Cl. 219-121.0EB.

Poduje, Noel S.: *See*—
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Pommer, Ernst-Heinrich: *See*—
Reuther, Wolfgang; Raff, Paul; Pommer, Ernst-Heinrich; and Heidenreich, Hans-Peter, 4,158,001, Cl. 260-141.000.

Porten, Ronald M.: *See*—
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Post Office: *See*—
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Moyaux, Alain G.; Amann, Gilbert J.; Lebrun, Amedee; Poupon, Michel; and Gorgeret, Gerard, 4,157,817, Cl. 266-222.000.

PPG Industries, Inc.: *See*—
Fonner, Frederick A., 4,157,732, Cl. 166-315.000.
Gagne, Robert, 4,157,908, Cl. 65-99.00A.
Imler, Vaughn R., 4,157,910, Cl. 65-351.000.

Prentice, Jack L., to United States of America, Navy. Heat sources for thermal batteries: exothermic intermetallic reactions. 4,158,084, Cl. 429-112.000.

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Spacek, George C., 4,157,660, Cl. 73-194.00E.

Pring, Teofilo, to Boston Insulated Wire & Cable Co. Armor wrapping tool. 4,157,614, Cl. 29-745.000.

Probst, Reinhard, to Ernst Leitz Wetzlar GmbH. Method and apparatus for automatic parallax determination. 4,158,131, Cl. 250-201.000.

Procter & Gamble Company, The: *See*—
Clemens, Matthew L.; and Morton, Wendell J., 4,157,938, Cl. 162-207.000.
Llenado, Ramon A., 4,157,978, Cl. 252-135.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Leclercq, Phillippe, 4,158,048, Cl. 423-533.000.

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Akesson, Yngve R.; and Lundgren, Bror F., 4,157,681, Cl. 99-538.000.

Puhak, Peter G.; and Shaffer, Paul C., to GTE Sylvania Incorporated. CRT Base and pin protective means. 4,158,152, Cl. 313-325.000.

Queveau, Gerard, to S.A. Louis Heuliez. Retractable roof system for motorcars. 4,157,845, Cl. 296-137.00D.

Quilliam, Robert M.; Gallantree, Howitt R.; and Watt, Andrew J., to Marconi Company Limited, The. Pressure sensitive switch. 4,158,117, Cl. 200-181.000.

Raabe, Vern J. Roller chain plier. 4,157,594, Cl. 7-125.000.

Radel, Blaine F. On-site aggregate measure. 4,157,769, Cl. 222-43.000.

Radici, Pierino; Custro, Sergio; Ermoni, Mario; and Colombo, Paolo, to Societa' Italiana Resine S.I.R. S.p.A. Process for improving the stability of etherified acetal homopolymers. 4,158,091, Cl. 528-231.000.

Raff, Paul: *See*—
Reuther, Wolfgang; Raff, Paul; Pommer, Ernst-Heinrich; and Heidenreich, Hans-Peter, 4,158,001, Cl. 260-141.000.

Raible, Donald A., to Bentley Laboratories, Inc. Blood treating device. 4,157,965, Cl. 210-305.000.

Rainal, Attilio J., to Bell Telephone Laboratories, Incorporated. Method for improving the transmission properties of a connectorized flat cable interconnection assembly. 4,157,612, Cl. 29-628.000.

Raizon, Bernard M.: *See*—
Kaplan, Jean-Pierre; Raizon, Bernard M.; Obitz, Daniel C. L.; Manoury, Philippe M. J.; Najer, Henry; Jalfre, Maurice; and Giudicelli, Don P. R. L., 4,158,060, Cl. 424-274.000.

Ramot University Authority for Applied Research & Industrial Development Ltd.: *See*—
Yotam, Reuben; Lass, Yoram; and Caspi, Abraham, 4,157,711, Cl. 128-708.000.

Rary, James K.: *See*—
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Razig, Said I.: *See*—
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RCA Corporation: *See*—
Dischert, Robert A., 4,158,208, Cl. 358-10.000.
Levine, Peter A., 4,158,209, Cl. 358-31.000.
Neilson, John M. S., 4,158,206, Cl. 357-13.000.
Schade, Otto H., Jr., 4,158,178, Cl. 330-253.000.

Rech, Helmut: *See*—
Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, 4,157,666, Cl. 74-75.000.

Recognition Equipment Incorporated: *See*—
McWaters, Lynn; and Koenig, Robert B., 4,158,194, Cl. 340-146.3SY.

Redder, Manfred: *See*—
Grundken, Dieter; and Redder, Manfred, 4,157,751, Cl. 198-735.000.

Reed, Robert D., to John Zink Company. NOx abatement in gas burning where air is premixed with gaseous fuels prior to burning. 4,157,890, Cl. 431-187.000.

Reeves Brothers, Inc.: *See*—
Boon, Derk J., 4,158,032, Cl. 264-51.000.

Reichow, Gunter: *See*—
Kahle, Otto; and Reichow, Gunter, 4,157,835, Cl. 277-102.000.

Reid, Harry, Jr.: *See*—
Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., 4,157,655, Cl. 73-12.000.

Reilly Tar & Chemical Corporation: *See*—
Bailey, Thomas D.; and McGill, Charles K., 4,158,093, Cl. 542-455.000.

Reiner, Lawrence; and Hennig, Michael, to Mego Corp. Doll and device apparently superposing an object on doll's reflected image. 4,157,633, Cl. 46-116.000.

Reinhard, Russell R.: *See*—
Yaffe, Roberta; and Reinhard, Russell R., 4,157,970, Cl. 252-46.700.
Yaffe, Roberta; and Reinhard, Russell R., 4,157,971, Cl. 252-46.700.

Reliable Attachment Company: *See*—
Weigert, Karl, 4,157,689, Cl. 112-137.000.

Renard, Paul A.: *See*—
Hunt, John T.; and Renard, Paul A., 4,158,176, Cl. 330-4.300.

Renn, Charlie W. Compact golf course. 4,157,831, Cl. 273-176.0AB.

Resource Control Corporation: *See*—
Murdock, Douglas B., 4,157,659, Cl. 73-151.000.

Restaino, Alfred J., to ICI Americas Inc. Stabilized polymerizable vinyl urethane resin compositions. 4,158,027, Cl. 260-859.00R.

Reuter, Franz G.; and Menzel, Tankred, to Reuter Technologie GmbH, AM Rauhen Berge. Electrically conductive foam mouldings. 4,158,031, Cl. 521-57.000.

Reuter Technologie GmbH, AM Rauhen Berge: *See*—
Reuter, Franz G.; and Menzel, Tankred, 4,158,031, Cl. 521-57.000.
Reuther, Wolfgang; Raff, Paul; Pommer, Ernst-Heinrich; and Heidenreich, Hans-Peter, to BASF Aktiengesellschaft. Triorganotin compounds of hydroxydiazenium oxides and fungicidal uses thereof. 4,158,001, Cl. 260-141.000.
Ricoh Co., Ltd.: *See*—
Abe, Takeshi, 4,158,195, Cl. 340-150.000.
Ito, Minoru, 4,157,873, Cl. 400-124.000.
Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, 4,157,913, Cl. 96-1.50R.
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Riede, Gerhard; Larsson, Lars-Ake L.; Andersson, Roland J. E.; and Jonsson, Sven A., to Gambro AB. Sterilization method and apparatus for dialysis system. 4,158,034, Cl. 422-36.000.
Rinaldi, Giovanna. Variable ratio drive for gearing rotating parts to one another utilizable for cycles, motorcycles, motor vehicles and machines in general. 4,157,667, Cl. 74-750.00B.
Rishel, John W., to Dover Corporation. Duplex seal for a bag-type filter system. 4,157,964, Cl. 210-238.000.
Ritschel, Josef: *See*—
Bartsch, Rudolf; Bolter, Bruno; Kohler, Ulrich; and Ritschel, Josef, 4,157,754, Cl. 206-83.500.
Robert Bosch GmbH: *See*—
Maurer, Helmut, 4,157,948, Cl. 204-195.00S.
Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, 4,157,666, Cl. 74-75.000.
Roberts, William E., to AM International, Inc. Exposure station. 4,157,870, Cl. 355-121.000.
Robin, Gerard: *See*—
Bricot, Claude; Le Carvennec, Francois; and Robin, Gerard, 4,157,931, Cl. 156-230.000.
Robinson, James D., to Imperial Chemical Industries Limited. Openmouth containers. 4,157,762, Cl. 220-1.00R.
Robinson, Leo E. Screening bucket. 4,157,956, Cl. 209-260.000.
Robinson, Louise J. Liquid sampling device. 4,157,664, Cl. 73-425.40R.
Rockwell International Corporation: *See*—
Nicholas, David C., 4,158,107, Cl. 179-15.0AF.
Rodway Optical Industries Limited: *See*—
Wrigglesworth, Stanley, 4,157,636, Cl. 51-101.0LG.
Rogers, Wesley A.; and Auman, John T., to General Motors Corporation. Air cushion actuation and monitoring circuit. 4,158,191, Cl. 340-52.00H.
Rohde, Gunter: *See*—
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.
Romans, Ralph H.: *See*—
Parks, James R., 4,157,629, Cl. 43-113.000.
Ronk Electrical Industries, Inc.: *See*—
Hertz, Claude M., 4,158,225, Cl. 363-150.000.
Roos, Hans W. Water gravity plant feeder. 4,157,770, Cl. 222-70.000.
Roskott, Lodewijk; and Schroeder, Arnold, to Akzona Incorporated. Process for the preparation of a copolymerizable composition. 4,158,021, Cl. 568-567.000.
Ross, Edgar A., to Southern Weaving Company. Curved woven cable and method. 4,158,104, Cl. 174-117.00M.
Rostler, Peter S., to Jersey Nuclear-Avco Isotopes, Inc. Isotopically selective excitation from plural low levels to distinct excited levels. 4,158,139, Cl. 250-423.00P.
Roth, Norbert: *See*—
Martin, Rolf; Roth, Norbert; and Froese-Peeck, Ruediger, 4,158,134, Cl. 250-216.000.
Rowe International, Inc.: *See*—
Herring, Lloyd D., 4,157,670, Cl. 83-165.000.
Rubin, Mae K.: *See*—
Frilette, Vincent J.; and Rubin, Mae K., 4,157,950, Cl. 208-135.000.
Rudolph Beaver, Inc.: *See*—
Kozlowski, George J., Jr., 4,157,758, Cl. 206-363.000.
Rudroff, Martin G.: *See*—
Cerbone, Ralph L.; Lindsay, Robert A.; Noonan, John M.; and Rudroff, Martin G., 4,158,112, Cl. 179-99.00A.
Ruegg, Andre, to Contraves AG. Apparatus for the dosed dispensing of a liquid. 4,157,716, Cl. 128-218.00A.
Russell, Homer C.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.
Russo, Roy L.: *See*—
Kuhn, Lawrence; Myers, Robert A.; and Russo, Roy L., 4,158,204, Cl. 346-75.000.
Ryan, Ralph L.; and Taitel, Charles M., to Compensating Tension Controls, Inc. Low tension lap slicer unit. 4,157,934, Cl. 156-504.000.
Ryder International Corporation: *See*—
Thomas, Michael D., 4,157,600, Cl. 16-169.000.
Ryoichi, Fukumoto: *See*—
Nemoto, Tadashi; Ryoichi, Fukumoto; and Hakoda, Kozi, 4,157,694, Cl. 113-120.00A.
S. W. Hooper & Company, Ltd.: *See*—
Debor, Harald H. A., 4,157,761, Cl. 414-304.000.
Sabo, Julius A., to Western Electric Company, Inc. Edge connector for printed circuit boards. 4,157,857, Cl. 339-176.0MP.
Sabourin, Edward T.; and Barie, Walter P., Jr., to Gulf Research & Development Company. Epoxy resin compositions (case B) containing cumene-maleic anhydride residue. 4,158,090, Cl. 528-92.000.
Saito, Yoichi: *See*—
Funahashi, Kazutoshi; and Saito, Yoichi, 4,158,002, Cl. 260-143.000.
Sakai, Kazumasa; and Okuma, Tatsuhiko, to Trio Kabushiki Kaisha. Amplifier circuit. 4,158,179, Cl. 330-297.000.
Sanford, Richard: *See*—
Bourdon, Normand C.; and Sanford, Richard, 4,157,806, Cl. 249-184.000.
Saraceni, Remo. Mercury switch activated radio. 4,158,173, Cl. 325-361.000.
Sarosy, Edmund F.; and Kwasiborski, Stanley, Jr., to General Motors Corporation. Tailgate lock and control assembly. 4,157,844, Cl. 292-48.000.
Sasaki, Heizo: *See*—
Iwao, Tetsuya; Kono, Masahiro; Sasaki, Heizo; and Ito, Akira, 4,158,088, Cl. 526-128.000.
Sasaki, Masaomi: *See*—
Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, 4,157,913, Cl. 96-1.50R.
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Saslove, Moe. Rat trap. 4,157,628, Cl. 43-65.000.
Sather, Norman F.: *See*—
Kartsounes, George T.; and Sather, Norman F., 4,158,145, Cl. 290-52.000.
Sato, Hideo: *See*—
Inukai, Takashi; and Sato, Hideo, 4,158,011, Cl. 260-465.00D.
Satomi, Yasuhiko: *See*—
Ishii, Hiroshi; Arashi, Masahiko; Ishijima, Saburo; Miyaji, Kenichi; and Satomi, Yasuhiko, 4,157,779, Cl. 228-176.000.
Satterwhite, Charles R., to Unit Rig & Equipment Co. Conveyor folding and moldboard operation for excavating and loading systems. 4,157,623, Cl. 37-190.000.
Saunders, Norman B. Glazing panel assembly. 4,157,639, Cl. 52-222.000.
Savelova, Alexandra A.: *See*—
Orlov, Petr N.; Khasanov, Mukim M.; Nedospasov, Vladimir G.; Peshkov, Valery A.; and Savelova, Alexandra A., 4,157,637, Cl. 51-133.000.
Saviski, Frederic E.; Slagley, William E.; and Strangway, Peter K., to Inland Steel Company. Furnace bottom construction with seal. 4,157,815, Cl. 266-193.000.
Sawai, Suezo, to Nichiten Shosan Kabushiki Kaisha. Magnet equipped toy that changes posture. 4,157,630, Cl. 46-3.000.
Saxon, Bruce R., to International Telephone & Telegraph Corp. Exclusion system for a key telephone system. 4,158,111, Cl. 179-99.00A.
Scarpellino, Anthony J., Jr.; McEwen, James; and Borner, William G., to International Nickel Company, Inc., The. Composite electrode for electrolytic processes. 4,157,943, Cl. 204-37.00R.
Schabert, Hans-Peter; Irion, Leonhard; and Seidelberger, Hartmut, to Kraftwerk Union Aktiengesellschaft. Pressurized-water reactor emergency core shutdown. 4,157,939, Cl. 176-38.000.
Schade, Otto H., Jr., to RCA Corporation. Anti-latch circuit for amplifier stage including bipolar and field-effect transistors. 4,158,178, Cl. 330-253.000.
Schaffer, Johann; and Horrix, Willi, to UOP Inc. Continuous process for cleaning industrial waste gases containing formaldehyde. 4,158,045, Cl. 423-245.000.
Schaltenbrand, Eugene D., to Air Preheater Company, Inc., The. Filter bag assembly including a venturi-cage assembly. 4,157,901, Cl. 55-302.000.
Schenck, Hans-Uwe; and Hirsch, Guenter, to BASF Aktiengesellschaft. Paper coating composition containing a pigment, a polymer in the form of an aqueous dispersion and another polymer which is soluble in water. 4,157,995, Cl. 260-29.6RW.
Schetina, Otto; Wrulich, Herwig; and Zitz, Alfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Grease gun. 4,157,773, Cl. 222-263.000.
Schindel, Milton R., to Milltronics Limited. Flowmeters. 4,157,661, Cl. 73-228.000.
Schjeldahl, Gilmore T. Bail separator for nested containers. 4,157,767, Cl. 221-211.000.
Schlumberger Technology Corporation: *See*—
Coates, George R., 4,158,165, Cl. 324-6.000.
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., to Armstrong Cork Company. Process for producing decorative multilevel embossed surface covering. 4,158,073, Cl. 427-195.000.
Schollmeier, Gero: *See*—
Koeth, Helmut; and Schollmeier, Gero, 4,158,232, Cl. 364-724.000.
Schoolar, Richard B., to United States of America, Navy. Method of fabricating a high electrical frequency infrared detector by vacuum deposition. 4,157,926, Cl. 148-175.000.
Schrama-de Pauw, Agnes D. M.: *See*—
Stevels, Albert L. N.; Schrama-de Pauw, Agnes D. M.; and Pingault, Francois, 4,157,981, Cl. 252-301.40H.

Schroeder, Arnold: *See*—
Roskott, Lodewijk; and Schroeder, Arnold, 4,158,021, Cl. 568-567.000.
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, to Ovutime, Inc. Probe for obtaining cervical mucus and process thereof. 4,157,709, Cl. 128-759.000.
Schutz, Udo. Process for the manufacture of a pallet-mounted container. 4,157,609, Cl. 29-428.000.
Schwartz, Burton, to Milpak Incorporated. Air freshener dispenser. 4,157,787, Cl. 239-56.000.
Schwartz, James W., to Zenith Radio Corporation. Electron beam cathodoluminescent panel display. 4,158,157, Cl. 315-366.000.
Schwarz, Hans-Helmut: *See*—
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Schwarz, Hans-Helmut; and Bandtel, Eberhard, 4,157,986, Cl. 252-432.000.
Schwind, Heinz F.; Titz, Annemarie; and Koestel, Leopold. Overflow preventing kitchen utensil. 4,157,707, Cl. 126-386.000.
Scientific Drilling Controls: *See*—
Zuvela, Bernard R., 4,157,619, Cl. 33-352.000.
Seelinger, Wolfgang: *See*—
Ellenberger, Bernd; Seelinger, Wolfgang; and Wauer, Gerd, 4,157,825, Cl. 271-10.000.
Segnitz, Adolph: *See*—
Merger, Franz; and Segnitz, Adolph, 4,158,017, Cl. 260-585.00B.
Seibicke, Horst: *See*—
Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, 4,157,666, Cl. 74-75.000.
Seidelberger, Hartmut: *See*—
Schaberl, Hans-Peter; Irion, Leonhard; and Seidelberger, Hartmut, 4,157,939, Cl. 176-38.000.
Seider, Robert J.: *See*—
Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, 4,157,898, Cl. 51-309.000.
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, G. Irvin, to Burroughs Corporation. Digital video display system with a plurality of gray-scale levels. 4,158,200, Cl. 340-750.000.
Seitz, Lamont J. Heating unit for disinfecting soft lenses, or the like. 4,158,126, Cl. 219-439.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,158,075, Cl. 427-220.000.
Seliger, Robert L.; and Sullivan, Paul A., to Hughes Aircraft Company. Process for channeling ion beams. 4,158,141, Cl. 250-492.00A.
Sentementes, Thomas J.: *See*—
Patton, Robert J.; and Sentementes, Thomas J., 4,157,729, Cl. 164-87.000.
Senter, Robert L.; and Andrich, Millard. Pipe clamp. 4,157,800, Cl. 248-72.000.
Sestina, Michael B.: *See*—
Speraw, Floyd G.; Sestina, Michael B.; and Hittinger, Paul L., 4,158,130, Cl. 235-146.000.
Severus-Laubenfeld, Harald, to Swiss Aluminium Ltd. Composite material and a process and device for its manufacture. 4,158,079, Cl. 428-172.000.
Shaffer, Paul C.: *See*—
Puhak, Peter G.; and Shaffer, Paul C., 4,158,152, Cl. 313-325.000.
Sharabash, Moustafa M.: *See*—
Greene, James A.; Nevin, Robert S.; and Sharabash, Moustafa M., 4,158,053, Cl. 424-61.000.
Sharp Kabushiki Kaisha: *See*—
Washizuka, Isamu; Hashimoto, Shintaro; Hashimoto, Sadakatsu; and Komaki, Shigeki, 4,158,230, Cl. 364-708.000.
Shen, Chah Moh: *See*—
Loshaek, Samuel; and Shen, Chah Moh, 4,158,089, Cl. 526-264.000.
Sherrit Gordon Mines Limited: *See*—
Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., 4,157,912, Cl. 75-101.00R.
Sherwin, Martin B.; and Brownstein, Arthur M., to Chem Systems, Inc. Process for the preparation of β-phenylethyl alcohol via homologation. 4,158,100, Cl. 568-715.000.
Shevchuk, George J., to Bell Telephone Laboratories, Incorporated. Unitary structure flexible retaining clip. 4,157,856, Cl. 339-75.00R.
Shilling, Jack W.: *See*—
Malagari, Frank A., Jr.; Miller, Robert F.; Shilling, Jack W.; and Wells, James H., 4,157,925, Cl. 148-111.000.
Shimamura, Isao: *See*—
Hamaoka, Tsutomu; Ogawa, Junkichi; and Shimamura, Isao, 4,157,915, Cl. 96-55.000.
Shinagana Refractories Co. Ltd.: *See*—
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.
Shinagawa Chemical Industry Co., Ltd.: *See*—
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,158,075, Cl. 427-220.000.
Shinko Denshi Company Limited: *See*—
Nishiguchi, Yuzuru; and Fujioka, Utaro, 4,157,738, Cl. 177-1.000.
Shiro, Yoshinori: *See*—
Nagasaki, Hideo; Kojima, Takashi; and Shiro, Yoshinori, 4,158,000, Cl. 260-45.8NW.
Showa Aluminum Kabushiki Kaisha: *See*—
Uchiyama, Toshimitsu; Hasegawa, Minoru; Ootsuka, Tatsuo; and Matsumoto, Hiroshi, 4,158,074, Cl. 427-214.000.
Showa Denko Kabushiki Kaisha: *See*—
Mitamura, Ryota; and Itoh, Tadanao, 4,157,728, Cl. 164-4.000.
Shultz, Walter; Sieger, George M.; and Krieger, Charles, to American Cyanamid Company. Administration of 16α,17α-cyclopentylidenedioxy-9α-fluor O-11β,21-dihydroxy-1,4-pregnadiene-3,20-dione 21-acetate. 4,158,055, Cl. 424-241.000.
Sick, Paul J.; and Hazel, James W., to Albany International Corp. Impression surface conveyor belting and method of manufacture. 4,157,752, Cl. 198-847.000.
Sieger, George M.: *See*—
Shultz, Walter; Sieger, George M.; and Krieger, Charles, 4,158,055, Cl. 424-241.000.
Siegrist, Adolf E.; Liechti, Peter; Meyer, Hans R.; and Weber, Kurt, to Ciba-Geigy AG. Production of aromatic compounds containing ethylene double bonds. 4,158,099, Cl. 568-635.000.
Siemens Aktiengesellschaft: *See*—
Gross, Franz, 4,158,154, Cl. 315-3.500.
Gruenberger, Gerhard; Merkle, Heinz; and Sunkler, Anton, 4,158,174, Cl. 325-404.000.
Hauenstein, Alfred, 4,158,155, Cl. 315-151.000.
Koeth, Helmut; and Schollmeier, Gero, 4,158,232, Cl. 364-724.000.
Krause, Gerhard, 4,158,144, Cl. 250-551.000.
Martin, Rolf; Roth, Norbert; and Froese-Peeck, Ruediger, 4,158,134, Cl. 250-216.000.
Spaeth, Werner; and Bacs, Laszlo, 4,158,133, Cl. 250-211.00J.
Sikorski, Stephen L., to Eastman Kodak Company. Guide rail extractor for molded plastic articles. 4,157,888, Cl. 425-556.000.
Silver, Arthur W. Method of making a photograph album. 4,157,842, Cl. 281-38.000.
Simon, Hans. Cable grommet with traction relief. 4,157,799, Cl. 248-56.000.
Sims, Anson; and Jones, Lawrence T., to California R & D Center. Toy assembly with sound device. 4,157,826, Cl. 272-53.200.
Singer Company, The: *See*—
Hubka, Theodore; and Slater, Robert W., 4,158,202, Cl. 343-8.000.
Smith, Michael R.; and Burns, Richard H., 4,158,201, Cl. 340-783.000.
Sink, William H.; and Flotow, Richard A., to Dana Corporation. Clutch with friction reducing lever assembly. 4,157,749, Cl. 192-99.00A.
Slagley, William E.: *See*—
Saviski, Frederic E.; Slagley, William E.; and Strangway, Peter K., 4,157,815, Cl. 266-193.000.
Slater, Robert W.: *See*—
Hubka, Theodore; and Slater, Robert W., 4,158,202, Cl. 343-8.000.
Smeets-Mertens, Maria J. F.: *See*—
van de Moesdijk, Cornelis G. M.; and Smeets-Mertens, Maria J. F., 4,158,047, Cl. 423-387.000.
Smeulers, Wouter; and Amsen, Willem H., to U.S. Philips Corporation. Device for coupling transistors operated in I^2L to a transistor operated at a higher bias-current. 4,158,146, Cl. 307-213.000.
Smith, Edward M., to Gorman-Rupp Company, The. Bag compressing device for dispensing fluid. 4,157,771, Cl. 222-103.000.
Smith, Gertrude; and Giulie, Joe D., to Devoke Company. Binder for computer printout. 4,157,875, Cl. 402-4.000.
Smith, Michael R.; and Burns, Richard H., to Singer Company, The. Flat electro optic display panel and method of using same. 4,158,201, Cl. 340-783.000.
Smith, Oliver W.: *See*—
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,157,947, Cl. 204-159.230.
Smolin, Edwin M.: *See*—
Lindner, Robert A.; and Smolin, Edwin M., 4,157,990, Cl. 252-56.00S.
Smoot Co.: *See*—
Smoot, David K., 4,157,848, Cl. 406-182.000.
Smoot, David K., to Smoot Co. Diverter valve. 4,157,848, Cl. 406-182.000.
Sobel, David D. Picture frame and method for making same. 4,157,624, Cl. 40-152.100.
Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Radici, Pierino; Custro, Sergio; Ermoni, Mario; and Colombo, Paolo, 4,158,091, Cl. 528-231.000.
Societe Anonyme D.B.A.: *See*—
Marouby, Guy, 4,157,850, Cl. 303-109.000.
S.A. des Anciens Etablissements Paul Wurth: *See*—
Legille, Edouard, 4,157,816, Cl. 266-194.000.
S.A. Louis Heuliez: *See*—
Queveau, Gerard, 4,157,845, Cl. 296-137.00D.
Societe Colmant Cuvelier: *See*—
Bonnel, Michel G., 4,157,889, Cl. 431-182.000.
Societe Nationale Elf Aquitaine: *See*—
Bernard, Jean R.; and Bousquet, Jacques, 4,157,949, Cl. 208-112.000.
Despois, Jacques; and Nougarede, Francis, 4,157,730, Cl. 165-45.000.
Solyst, Erik R., to International Business Machines Corporation. Method for producing nozzle arrays for ink jet printers. 4,157,935, Cl. 156-644.000.
Sostegni, Giuliano, to Chenil Cont GS. S.R.L. Production of a boucle type fancy yarn. 4,157,645, Cl. 57-24.000.
Sothje, Gunther, to Gebruder Netzsch, Maschinenfabrik GmbH & Co. Pressing die for producing ceramic moulds from a pulverulent mass. 4,157,887, Cl. 425-405.00H.
Soto, Enrique. Apparatus for forming pleated materials. 4,157,775, Cl. 223-34.000.

Southern Weaving Company: *See—*
Ross, Edgar A., 4,158,104, Cl. 174-117.00M.
Spacek, George C., to Prince Corporation. Digital flowmeter. 4,157,660, Cl. 73-194.00E.
Spaeth, Werner; and Bacs, Laszlo, to Siemens Aktiengesellschaft. Filters for photo-detectors. 4,158,133, Cl. 250-211.00J.
Speas, Orlice A.: *See—*
Coggins, Sherrill B.; Lewis, James R.; and Speas, Orlice A., 4,157,651, Cl. 66-147.000.
Speizman Industries: *See—*
Coggins, Sherrill B.; Lewis, James R.; and Speas, Orlice A., 4,157,651, Cl. 66-147.000.
Speraw, Floyd G.; Sestina, Michael B.; and Hittinger, Paul L., to NCR Corporation. Interchangeable auxiliary keyboard. 4,158,130, Cl. 235-146.000.
Spin Physics, Inc.: *See—*
Griffith, Neil J., 4,158,213, Cl. 360-121.000.
Spodig, Heinrich. Magnetic separator. 4,157,955, Cl. 209-219.000.
Sprunck, Emile: *See—*
Leroy, Pierre J.; and Sprunck, Emile, 4,157,813, Cl. 266-47.000.
Stafford, G. Irvin: *See—*
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, G. Irvin, 4,158,200, Cl. 340-750.000.
Stamicarbon, B.V.: *See—*
van de Moesdijk, Cornelis G. M.; and Smeets-Mertens, Maria J. F., 4,158,047, Cl. 423-387.000.
Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., 4,158,095, Cl. 548-313.000.
Stanaitis, Peter P., to Textron Inc. Fastener and captive frusto-conical washer assembly. 4,157,725, Cl. 151-37.000.
Standard Oil Company: *See—*
Dolhyj, Serge R.; and Milberger, Ernest C., 4,157,987, Cl. 252-437.000.
Hengstebeck, Robert J., 4,157,905, Cl. 62-34.000.
Stanko, Ronald T. Prevention of the accumulation of fatty deposits in the liver. 4,158,057, Cl. 424-252.000.
Stautzenberger, Adin L.; Paul, James L.; and Unruh, Jerry D., to Celanese Corporation. Hydroformylation of olefins. 4,158,020, Cl. 260-604.0HF.
Steele, Lawrence. Pipe reaming tool. 4,157,879, Cl. 408-83.000.
Stefano, Gene E.; and Tally, David N., to Gates Rubber Company, The. Halogenated butyl interlayer for reinforced elastomeric hose articles. 4,158,033, Cl. 264-103.000.
Stefanov, Boris. Wailing siren detecting circuit. 4,158,190, Cl. 340-34.000.
Stenzel, Gerhard: *See—*
Grottrup, Helmut; Kaule, Wittich; Maurer, Thomas; and Stenzel, Gerhard, 4,157,784, Cl. 235-491.000.
Sterling, Henley F.; Weir, Donald A.; George, Rodger G.; and Baxter, John V., to International Standard Electric Corporation. Line current detector. 4,158,170, Cl. 324-96.000.
Stevels, Albert L. N.; Schrama-de Pauw, Agnes D. M.; and Pingault, Francois, to U.S. Philips Corporation. Method of producing a luminescent alkaline earth metal fluorohalide activated by bivalent europium. 4,157,981, Cl. 252-301.40H.
Stoyan, Nick. Method for making lenses from a modified polymerization product of methyl methacrylate. 4,158,030, Cl. 264-1.000.
Strangway, Peter K.: *See—*
Saviski, Frederic E.; Slagley, William E.; and Strangway, Peter K., 4,157,815, Cl. 266-193.000.
Stratis, Melvin A. Plastic laminate wall covering kit. 4,157,756, Cl. 206-223.000.
Struger, Odo J.; and Grants, Valdis, to Allen-Bradley Company. Programmable controller with limit detection. 4,158,226, Cl. 364-104.000.
Studholme, Robert M.: *See—*
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Sugino, Yoshito, to Sugiyo Co., Ltd. Crab meat substitute and method of preparing same. 4,158,065, Cl. 426-104.000.
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Sugino, Yoshito, 4,158,065, Cl. 426-104.000.
Sugranes, Jose F. Process for the continuous manufacture of solid alkaline silicates. 4,158,046, Cl. 423-334.000.
Sullivan, Paul A.: *See—*
Seliger, Robert L.; and Sullivan, Paul A., 4,158,141, Cl. 250-492.00A.
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Sumito Metal Industries, Ltd.: *See—*
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.
Sumitomo Chemical Company, Limited: *See—*
Nagasaki, Hideo; Kojima, Takashi; and Shiro, Yoshinori, 4,158,000, Cl. 260-45.8NW.
Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,158,016, Cl. 260-570.50R.
Sumitomo Durez Company, Ltd.: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inoue, Naomitsu, 4,157,993, Cl. 260-28.00P.
Sundmar, J. P. Goran: *See—*
Hultgren, K. Sten R.; and Sundmar, J. P. Goran, 4,157,678, Cl. 89-47.000.
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Suzukamo, Gohu: *See—*
Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,158,016, Cl. 260-570.50R.
Suzuki, Kanekichi. Apparatus for guiding a welder or the like along a predetermined path. 4,158,161, Cl. 318-578.000.
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Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,158,016, Cl. 260-570.50R.
Swift, Harold E.: *See—*
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Swingline, Inc.: *See—*
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Swinkels, Godefridus M.: *See—*
Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., 4,157,912, Cl. 75-101.00R.
Swiss Aluminium Ltd.: *See—*
Severus-Laubenfeld, Harald, 4,158,079, Cl. 428-172.000.
Syntex (U.S.A.) Inc.: *See—*
Cooper, Gary F.; and Van Horn, Albert R., 4,158,012, Cl. 260-546.000.
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Takabatake, Masaharu; and Tarui, Haruo, to Mitsui Shipbuilding and Engineering Co.; and Mitsui Petrochemical Industries Ltd. Method for removing nitric oxide from industrial gases. 4,158,044, Cl. 423-235.000.
Takagaki, Mitsuhiro. Pendant with an alarm built in. 4,158,197, Cl. 340-574.000.
Takagi, Masao: *See—*
Asano, Sadame; Hayase, Masahiro; Tabuchi, Hiromasa; Takagi, Masao; Kasai, Koichi; Hoshino, Koei; Fukuya, Suejiro; and Hirahara, Hiroaki, 4,157,621, Cl. 34-13.000.
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Takahashi, Norio; and Ito, Teruo, to Kabushiki Kaisha Daini Seikosha. Hand reversing system for an electronic timepiece. 4,157,647, Cl. 58-85.500.
Takeda, Yoshiyuki; Koga, Shinichiro; and Fukuda, Yutaka, to Mitsubishi Chemical Industries Ltd. Process for preparing 1,5-dinitroanthraquinone. 4,158,009, Cl. 260-369.000.
Takemae, Yoshihiro; and Nakano, Tomio, to Fujitsu Limited. Semiconductor memory device with a plurality of memory cells and a sense amplifier circuit thereof. 4,158,241, Cl. 365-205.000.
Takigawa, Tomoshi: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; and Iwama, Hideto, 4,157,866, Cl. 352-171.000.
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Talent, Charles H.; and Talent, Carol S., 4,157,598, Cl. 15-145.000.
Talent, Charles H.; and Talent, Carol S. Paint brush having detachable extension rod. 4,157,598, Cl. 15-145.000.
Tally, David N.: *See—*
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Tanaka, Kyoichi; Mio, Takeshi; Takahashi, Kozo; and Yoshikawa, Toshiharu, to Toyo Contact Lens Company, Limited. Method of coloring water-absorbable plastics and colored water-absorbable plastics. 4,157,892, Cl. 8-14.000.
Tanaka, Mitsugu: *See—*
Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, 4,157,916, Cl. 96-56.500.
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Shinagawa Chemical Industry Co., Ltd. Stabilizers for chlorine-containing resins and process for producing the same. 4,158,075, Cl. 427-220.000.
Tanno, Shogo; and Hirose, Masateru, to Dainichi-Nippon Cables, Ltd. Apparatus and method for electrically testing multi-core cables and automatically indicating the presence of a defective core. 4,158,167, Cl. 324-51.000.
Tarui, Haruo: *See—*
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Taylor, Dale W. W., executor: *See—*
Taylor, David L., deceased; and Taylor, Dale W. W., executor, 4,157,830, Cl. 273-167.00G.
Taylor, David L., deceased; and by Taylor, Dale W. W., executor. Wood golf club. 4,157,830, Cl. 273-167.00G.
Teijin Limited: *See—*
Funahashi, Kazutoshi; and Saito, Yoichi, 4,158,002, Cl. 260-143.000.
Teitel, Sidney: *See—*
Gurien, Harvey; and Teitel, Sidney, 4,158,007, Cl. 260-315.000.

Teller, Howard S., Jr. Latching detector circuit. 4,158,148, Cl. 307-233.00R.
Tengam Company Limited: *See—*
Jessop, Edward T.; and Hanson, Robert C., 4,157,963, Cl. 210-222.000.
Terry, Clifford. Surgical microscope system. 4,157,859, Cl. 350-35.000.
Texaco Inc.: *See—*
Thies, Howard J., 4,157,969, Cl. 210-521.000.
Yaffe, Roberta; and Reinhard, Russell R., 4,157,970, Cl. 252-46.700.
Yaffe, Roberta; and Reinhard, Russell R., 4,157,971, Cl. 252-46.700.
Texasgulf Inc.: *See—*
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Textron Inc.: *See—*
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Stanaitis, Peter P., 4,157,725, Cl. 151-37.000.
Wenzel, Robert H., 4,157,679, Cl. 409-99.000.
Theisen, Alois. Device for sealing between the rotary piston and the separating slide of a rotary engine, a rotary piston pump, or the like. 4,157,882, Cl. 418-64.000.
Thermo-Core Building Systems, Inc.: *See—*
Della-Donna, Alphonse, 4,157,638, Cl. 52-173.00R.
Thies, Howard J., to Texaco Inc. Settling tank structure. 4,157,969, Cl. 210-521.000.
Thies, Peter W.; and David, Samuel, to Kali-Chemie Pharma GmbH. 2,9-Dioxatricyclo[4,3,1,$0^{3,7}$] decane derivatives, processes for their preparation and pharmaceutical compositions thereof. 4,158,061, Cl. 424-278.000.
Thiokol Corporation: *See—*
Canfield, Alan R.; Faupell, Lawrence C.; and Cardall, Stanley H., 4,157,788, Cl. 239-265.350.
Thomas, Michael D., to Ryder International Corporation. Hinge assembly. 4,157,600, Cl. 16-169.000.
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Bricot, Claude; Le Carvennec, Francois; and Robin, Gerard, 4,157,931, Cl. 156-230.000.
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Archambault, Yves; Epsztein, Bernard; and Le Clerc, Bernard, 4,158,177, Cl. 330-4.600.
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Thonnessen, Gunter: *See—*
Dageforde, Hans-Gerd; and Thonnessen, Gunter, 4,158,185, Cl. 333-243.000.
Thorell, Jan I. Analysis process. 4,158,135, Cl. 250-303.000.
Tiethof, Jack A., to Engelhard Minerals & Chemicals Corporation. Hydrosulfite preparation. 4,157,980, Cl. 252-188.000.
Timex Corporation: *See—*
Wuthrich, Paul, 4,157,646, Cl. 58-19.00B.
Tioxide Group Limited: *See—*
New, George W., 4,158,123, Cl. 219-121.00P.
Tippmann, Joseph R. Mold construction method and apparatus for making plastic backings for skating rink dasher boards. 4,157,885, Cl. 264-553.000.
Tipton, Larry J., to ACF Industries, Incorporated. Means for positioning a carburetor fuel metering rod. 4,158,029, Cl. 261-51.000.
Titz, Annemarie: *See—*
Schwind, Heinz F.; Titz, Annemarie; and Koestel, Leopold, 4,157,707, Cl. 126-386.000.
Tojo, Akio; Ohnishi, Kimimasa; Hosono, Isamu; and Ogawa, Mikiyoshi, to Nissan Motor Company, Limited. Weft yarn grasping apparatus for fluid jet loom. 4,157,722, Cl. 139-450.000.
Tokar, Joseph C., to Donaldson Company, Inc. Air cleaner system for over-highway trucks. 4,157,902, Cl. 55-385.00B.
Tokuda, Hirokuni: *See—*
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Tokyo Kohan Co. Ltd.: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
Kamei, Kiyoo; Ikoma, Toshiaki; and Tokuda, Hirokuni, 4,157,610, Cl. 29-571.000.
Nakasuji, Mamoru, 4,158,140, Cl. 250-492.00A.
Tolley, William K., to UOP Inc. Separation of ilmenite and rutile. 4,158,041, Cl. 423-80.000.
Tomasch, Wilhelm, to Zentralinstitut fur Schweisstechnik der DDR. Apparatus for advancing an elongate element. 4,157,777, Cl. 226-112.000.
Tomuro, Yasushi. Ascent and descent means of a free-arm sewing machine. 4,157,851, Cl. 312-29.000.
Tone Commander Systems, Inc.: *See—*
Ullakko, Richard J.; and De Pinto, Victor M., 4,158,110, Cl. 179-99.00R.
Torguet, Roger J.: *See—*
Bridoux, Edouard; Bruneel, Christian D.; Torguet, Roger J.; and Nongaillard, Bertrand, 4,157,665, Cl. 73-607.000.
Totty, Stuart M.; and Meier, James A., to Inmont Corporation. Low temperature bake water reducible acrylic enamel. 4,157,994, Cl. 260-29.4UA.
Toyama, Masamichi; Takigawa, Tomoshi; and Iwama, Hideto, to Canon Kabushiki Kaisha. Motion picture camera. 4,157,866, Cl. 352-171.000.
Toyo Contact Lens Company, Limited: *See—*
Tanaka, Kyoichi; Mio, Takeshi; Takahashi, Kozo; and Yoshikawa, Toshiharu, 4,157,892, Cl. 8-14.000.
Toyomaki, Kazuya, to Nissan Motor Company, Limited. Circuit for automatically switching operating modes of feedback-controlled systems. 4,158,175, Cl. 325-420.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukuma, Nobuo; and Katou, Yoshito, 4,157,668, Cl. 74-798.000.
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Transkrit Corporation: *See—*
Dicker, David, 4,157,759, Cl. 206-610.000.
Trebnick, Ralph J. Operator propelled water skis. 4,157,597, Cl. 9-310.00D.
Trecker, David J.: *See—*
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,157,947, Cl. 204-159.230.
Trepka, William J., to Phillips Petroleum Company. Organo lithium initiator. 4,158,098, Cl. 568-633.000.
Trio Kabushiki Kaisha: *See—*
Sakai, Kazumasa; and Okuma, Tatsuhiko, 4,158,179, Cl. 330-297.000.
Trnka, Bertha E., administrator: *See—*
Trnka, Otto A., deceased; Trnka, Bertha E., administrator; and Trnka, Gilbert, administrator, 4,157,843, Cl. 285-113.000.
Trnka, Gilbert, administrator: *See—*
Trnka, Otto A., deceased; Trnka, Bertha E., administrator; and Trnka, Gilbert, administrator, 4,157,843, Cl. 285-113.000.
Trnka, Otto A., deceased; by Trnka, Bertha E., administrator; and Trnka, Gilbert, administrator. Hose coupling. 4,157,843, Cl. 285-113.000.
Trott, Arthur F.: *See—*
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Troutner, Vernon H.: *See—*
Foltz, Carl L.; Troutner, Vernon H.; and Trott, Arthur F., 4,157,714, Cl. 128-92.00B.
Tschelisnik, Rudolf. Fishing line float with electric flashlight. 4,157,627, Cl. 43-17.000.
Tsokol, Evgeny L.: *See—*
Podola, Nikolai V.; Obolonsky, Alexei P.; and Tsokol, Evgeny L., 4,158,122, Cl. 219-121.0EB.
Tudor, George A.: *See—*
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,158,073, Cl. 427-195.000.
Turner, Lenord H. Fishing reel. 4,157,795, Cl. 242-84.50R.
Tuznik, Franciszek; and Lis, Andrzej, to Instytut Mechaniki Precyzyjnej. Method for recovery of metals from metal plating baths and neutralizing toxic effluents therefrom. 4,157,942, Cl. 204-35.00R.
TV Time, Inc.: *See—*
Banowitz, Benjamin, 4,158,064, Cl. 426-76.000.
Tylenda, Francis P.: *See—*
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Uchiyama, Toshimitsu; Hasegawa, Minoru; Ootsuka, Tatsuo; and Matsumoto, Hiroshi, to Showa Aluminum Kabushiki Kaisha. Process for preparing colored aluminum powder. 4,158,074, Cl. 427-214.000.
Udagawa, Yoshiaki: *See—*
Yamamoto, Haruhiko; Udagawa, Yoshiaki; and Hirose, Yoshinao, 4,158,220, Cl. 361-415.000.
Ueda, Hirozo; and Aotsuka, Yasuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,157,917, Cl. 96-69.000.
Ullakko, Richard J.; and De Pinto, Victor M., to Tone Commander Systems, Inc. Tone selective key telephone intercom system including digital tone detector. 4,158,110, Cl. 179-99.00R.
Ullrich, Hansjurgen, to Dr. C. Otto & Comp. G.m.b.H. Pressure vessel for separating sulfur from an aqueous sulfur suspension. 4,158,039, Cl. 422-262.000.
Ultrafilter GmbH: *See—*
Kronsbein, Dirk G., 4,157,968, Cl. 210-489.000.
Unilog Systems Corporation: *See—*
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Union Siderurgique du Nord et de l'est de la France: *See—*
Moyaux, Alain G.; Amann, Gilbert J.; Lebrun, Amedee; Poupon, Michel; and Gorgeret, Gerard, 4,157,817, Cl. 266-222.000.
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Army: *See—*
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Gerwin, Harry L., 4,157,685, Cl. 102-214.000.
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Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., 4,157,655, Cl. 73-12.000.
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Bishop, Stephen G.; McCombe, Bruce D.; and Koschel, Wulf H., 4,158,207, Cl. 357-18.000.
Clark, Joseph A., 4,157,863, Cl. 350-358.000.
Davies, Kirk E., 4,157,861, Cl. 350-285.000.
Falterman, Charles W.; Bowen, James A.; and Josephson, Larry H., 4,157,928, Cl. 149-109.200.
Grundler, Donald F., 4,158,151, Cl. 307-312.000.
Pilla, Gabriel J., 4,157,991, Cl. 260-22.00S.
Prentice, Jack L., 4,158,084, Cl. 429-112.000.
Schoolar, Richard B., 4,157,926, Cl. 148-175.000.
Wardle, William F., 4,158,189, Cl. 340-9.000.

U.S. Philips Corporation: *See*—
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Smeulers, Wouter; and Amsen, Willem H., 4,158,146, Cl. 307-213.000.
Stevels, Albert L. N.; Schrama-de Pauw, Agnes D. M.; and Pingault, Francois, 4,157,981, Cl. 252-301.40H.

University of Illinois Foundation: *See*—
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UOP Inc.: *See*—
Addison, George E., 4,158,025, Cl. 585-321.000.
Addison, George E., 4,158,026, Cl. 585-321.000.
Antos, George J., 4,157,989, Cl. 252-441.000.
Schaffer, Johann; and Horrix, Willi, 4,158,045, Cl. 423-245.000.
Tolley, William K., 4,158,041, Cl. 423-80.000.

Uphoff, Theodore C.: *See*—
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Haller, George S.; and Uphoff, Theodore C., 4,157,810, Cl. 254-131.000.
Haller, George S.; and Uphoff, Theodore C., 4,157,811, Cl. 254-131.000.

Ursel, Eckhard; Seibicke, Horst; Rech, Helmut; Horcher, Rolf; Linhart, Hans-Joachim; and Kolb, Erich, to Robert Bosch GmbH. Motion-transmitting arrangement. 4,157,666, Cl. 74-75.000.

van de Moesdijk, Cornelis G. M.; and Smeets-Mertens, Maria J. F., to Stamicarbon, B.V. Process for the preparation of a hydroxylamine salt. 4,158,047, Cl. 423-387.000.

Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., to Stamicarbon, B.V. Process for the preparation of 5-(4-amino butyl)-hydantoin and/or 2-ureido-6-amino-hexanoic acid amide. 4,158,095, Cl. 548-313.000.

van der Burg, Willem J., to Akzona Incorporated. Tension reducing 1,2,3,4,4a,13b-hexahydro-dibenzo[2,3;6,7]thiepino[4,5-c]pyridines. 4,158,058, Cl. 424-256.000.

van der Burg, Willem J., to Akzona Incorporated. Tension reducing 2,3,4,4a,9,13b-hexahydro-dibenz[1,2;5,6]cycloheptа[3,4-c]pyridines. 4,158,059, Cl. 424-267.000.

van der Lely, Cornelis. Haymaking machines. 4,157,644, Cl. 56-370.000.

Van Horn, Albert R.: *See*—
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Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft: *See*—
Schetina, Otto; Wrulich, Herwig; and Zitz, Alfred, 4,157,773, Cl. 222-263.000.

Verheijen, Egidius J. M.: *See*—
Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., 4,158,095, Cl. 548-313.000.

Viessmann, Hans. Water heating boiler. 4,157,698, Cl. 122-136.00R.

Villwock, George F.; and Medina, Conrad R., to Swingline, Inc. Binding system. 4,157,778, Cl. 227-8.000.

Vockenhuber, Karl: *See*—
Kantner, Otto; and von Belvard, Peter R., 4,157,865, Cl. 352-27.000.

Vogt, Heinz: *See*—
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von Allworden, Wilhelm. Coupling hook for farm tractors. 4,157,838, Cl. 280-508.000.

von Belvard, Peter R.: *See*—
Kantner, Otto; and von Belvard, Peter R., 4,157,865, Cl. 352-27.000.

von der Eltz, Hans-Ulrich; and Glander, Siegfried, to Hoechst Aktiengesellschaft. Process for the uniform dyeing of textile material webs with the aid of a uniform application of liquor. 4,157,595, Cl. 8-151.000.

von Halasz, Sigmar P., to Hoechst Aktiengesellschaft. Process for the manufacture of octafluoropropane. 4,158,023, Cl. 260-653.900.

Von Rymon Lipinski, Gert-Wolfhard; and Luck, Erich, to Hoechst Aktiengesellschaft. Sweetener mixture. 4,158,068, Cl. 426-548.000.

Voronkov, Leonid A.: *See*—
Danilin, Jury I.; Maringulov, Konstantin A.; Voronkov, Leonid A.; Mokeev, Mikhail N.; and Khripov, Anatoly M., 4,158,103, Cl. 174-68.500.

Vosahlo, Eva A.: *See*—
Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., 4,157,912, Cl. 75-101.00R.

W. H. Brady Co.: *See*—
Parkinson, Wayne K.; and Kissner, William R., 4,158,115, Cl. 200-5.00A.

W. R. Grace & Co.: *See*—
Wood, Louis L., 4,158,087, Cl. 521-137.000.

Wacker-Chemie GmbH: *See*—
Graf, Werner; John, Peter; and Frey, Volker, 4,158,010, Cl. 260-448.20P.

Wainer, Eugene, to Horizons Research Incorporated. Apparatus for the production of carbon monoxide and hydrogen. 4,157,896, Cl. 48-62.00R.

Walden, Jack M.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.

Waldvogel, Hartmut: *See*—
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.

Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, to Carborundum Company, The. Fused aluminum oxide abrasive grain containing reduced titanium oxide. 4,157,898, Cl. 51-309.000.

Walle, L. Irwin. Leak detection system. 4,157,656, Cl. 73-49.200.

Walley, Donald P.; and Hitchcock, Buddy J., to Heath Tecna Corporation. Low level diffusing reflector assembly. 4,158,223, Cl. 362-297.000.

Wallsten, Hans I., to Inventing S.A. Coating delivered as bubbles. 4,158,076, Cl. 427-294.000.

Walters, Harold C., to Phillips Petroleum Company. Azeotropic compositions. 4,157,979, Cl. 252-162.000.

Wanat, Stanley F.; and Barton, Oliver A., to American Hoechst Corporation. Light sensitive film composition. 4,157,918, Cl. 96-75.000.

Ward, John J. B.; and Barnes, Clive, to International Lead Zinc Research Organization, Inc. Trivalent chromium plating baths. 4,157,945, Cl. 204-51.000.

Ward, Maurice M. Grinding machine for grinding a helical groove in a workpiece of tapering axial section. 4,157,635, Cl. 51-95.0LH.

Ward, Robert R.: *See*—
Chang, Richard C.; and Ward, Robert R., 4,157,960, Cl. 210-23.00R.

Wardle, William F., to United States of America, Navy. Baffled blanket acoustic array incorporating an indented reaction plate. 4,158,189, Cl. 340-9.000.

Warmann, Bruno D. Pneumatic tube conveyor dispatcher. 4,157,796, Cl. 406-31.000.

Warren, Kenneth S.: *See*—
Pelley, Ronald P.; and Warren, Kenneth S., 4,158,049, Cl. 424-1.000.

Washburn, Clyde, to Harris Corporation. Low noise oscillator circuit. 4,158,182, Cl. 331-117.00R.

Washizuka, Isamu; Hashimoto, Shintaro; Hashimoto, Sadakatsu; and Komaki, Shigeki, to Sharp Kabushiki Kaisha. Electronic calculator with no protruding key tops. 4,158,230, Cl. 364-708.000.

Wason, Satish K.; and Mays, Robert K., to J. M. Huber Corporation. Novel precipitated siliceous products and methods for their use and production. 4,157,920, Cl. 106-292.000.

Watanabe, Katsumi, to Yugen Kaisha Watanabe Kenkyusho. Simplified structure of toy phonograph. 4,157,832, Cl. 274-1.00A.

Watanabe, Masanori; Nonomura, Kinzo; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Picture image display device. 4,158,210, Cl. 358-56.000.

Watkins, Gordon L.: *See*—
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., 4,158,062, Cl. 424-331.000.

Watson, Lewis A., to Dr. C. Otto & Comp. G.m.b.H. Method for operating a battery of horizontal coke ovens. 4,157,940, Cl. 201-1.000.

Watson, Robert E.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.

Watt, Andrew J.: *See*—
Quilliam, Robert M.; Gallantree, Howitt R.; and Watt, Andrew J., 4,158,117, Cl. 200-181.000.

Wauer, Gerd: *See*—
Ellenberger, Bernd; Seelinger, Wolfgang; and Wauer, Gerd, 4,157,825, Cl. 271-10.000.

Weber, Kurt: *See*—
Siegrist, Adolf E.; Liechti, Peter; Meyer, Hans R.; and Weber, Kurt, 4,158,099, Cl. 568-635.000.

Weigert, Karl, to Reliable Attachment Company. Moveable mounting for sewing machine binder. 4,157,689, Cl. 112-137.000.

Weir, Donald A.: *See*—
Sterling, Henley F.; Weir, Donald A.; George, Rodger G.; and Baxter, John V., 4,158,170, Cl. 324-96.000.
Weir, Donald R.; Swinkels, Godefridus M.; Parker, Ernest G.; Vosahlo, Eva A.; and Genik-Sas-Berezowsky, Roman M., to Cominco Ltd.; and Sherrit Gordon Mines Limited. Process for recovery of copper and zinc from complex sulphides. 4,157,912, Cl. 75-101.00R.
Weitz, Hans-Martin; Hartig, Juergen; and Platz, Rolf, to BASF Aktiengesellschaft. Manufacture of propylene oxide. 4,158,008, Cl. 260-348.160.
Weitzel, Steven A.: *See*—
Elms, William J.; and Weitzel, Steven A., 4,157,924, Cl. 148-6.200.
Wells, James H.: *See*—
Malagari, Frank A., Jr.; Miller, Robert F.; Shilling, Jack W.; and Wells, James H., 4,157,925, Cl. 148-111.000.
Wen, Chin-Yung; and Fan, Liang-Tseng, to Kansas State University Research Foundation. Method of filtration using convertible (semi-fluidized) beds. 4,157,959, Cl. 210-20.000.
Wenninger, Fred, Jr.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.
Wenzel, Robert H., to Textron Inc. Method of cycling a distensible tracer stylus relative to a pattern and to a workpiece. 4,157,679, Cl. 409-99.000.
Wesley-Jessen Inc.: *See*—
Loshaek, Samuel; and Shen, Chah Moh, 4,158,089, Cl. 526-264.000.
Westerhoff, Erhard. Intracorporal drive to produce a continuous traction or pressure and method of operating the same. 4,157,715, Cl. 128-92.00D.
Western Electric Company, Inc.: *See*—
Piazza, John R., 4,157,936, Cl. 156-659.000.
Sabo, Julius A., 4,157,857, Cl. 339-176.0MP.
Westinghouse Brake & Signal Company Limited: *See*—
Wickham, David J., 4,157,849, Cl. 303-38.000.
Westinghouse Electric Corp.: *See*—
Harrold, Ronald T., 4,158,168, Cl. 324-52.000.
Harrold, Ronald T.; and Bennett, Allan I., 4,158,169, Cl. 324-52.000.
Isenberg, Arnold O., 4,158,166, Cl. 324-29.000.
Wexell, Dale R., to Corning Glass Works. Glass enamel fluxes. 4,158,080, Cl. 428-212.000.
Wexell, Dale R., to Corning Glass Works. Vitreous enamel flux and enamel coated article. 4,158,081, Cl. 428-212.000.
Weyer, Rudi: *See*—
Hitzel, Volker; Weyer, Rudi; and Bosies, Elmar, 4,158,063, Cl. 424-324.000.
WHAM-O Mfg. Co.: *See*—
Brown, Gary W.; Whittington, Jimmie L.; and Geller, Douglas A., 4,157,703, Cl. 124-55.000.
Wheaton, Bruce M., to CEA Carter-Day Company. Pulsed backflush air filter. 4,157,899, Cl. 55-273.000.
Whitcroft, Alan J., to General Motors Corporation. Motor vehicle having a sliding door assembly. 4,157,846, Cl. 296-155.000.
White, Allen A., to Hesston Corporation. Baler loading apparatus. 4,157,643, Cl. 56-341.000.
White Chemical Corporation: *See*—
Mischutin, Vladimir, 4,158,077, Cl. 427-381.000.
Whittington, Jimmie L.: *See*—
Brown, Gary W.; Whittington, Jimmie L.; and Geller, Douglas A., 4,157,703, Cl. 124-55.000.
Wickham, David J., to Westinghouse Brake & Signal Company Limited. Continuous quick service apparatus for vehicle braking control. 4,157,849, Cl. 303-38.000.
Wiedmann, Siegfried K., to International Business Machines Corporation. Monolithically integrated storage cells. 4,158,237, Cl. 365-154.000.
Wilkinson, John D.: *See*—
Campbell, Roy E.; and Wilkinson, John D., 4,157,904, Cl. 62-27.000.
Williams, Gary E.: *See*—
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,158,073, Cl. 427-195.000.
Williams, R. L.; Latiolais, Rene L.; Gabriel, John L.; and Bouis, Robert L., to Freeport Minerals Company. Method and apparatus for utilizing accumulated underground water in the mining of subterranean sulphur. 4,157,847, Cl. 299-6.000.
Wilson, George E.: *See*—
Huang, Jerry Y. C.; Wilson, George E.; and Fischbach, Phillip C., 4,157,962, Cl. 210-42.00R.
Wilson, Scott R., to Display Corporation International. Eyeglass frame display device. 4,157,760, Cl. 211-13.000.
Wincanton Engineering Limited: *See*—
Charles, George K., 4,157,680, Cl. 99-454.000.
Winston, Edith; and Winston, Herbert. Hand grip for jump rope and similarly-gripped exercise devices. 4,157,827, Cl. 272-75.000.
Winston, Herbert: *See*—
Winston, Edith; and Winston, Herbert, 4,157,827, Cl. 272-75.000.
Wolf, Erich: *See*—
Deininger, Rolf; and Wolf, Erich, 4,158,006, Cl. 260-301.000.
Wolf, Robert: *See*—
Brandauer, Kurt; Flaig, Heinrich; Krautzberger, Franz; Kuhn, Friedrich; Rohde, Gunter; Waldvogel, Hartmut; Wolf, Robert; and Honold, Georg, 4,157,794, Cl. 242-66.000.
Wolff, Horst: *See*—
Botsch, Franz; Heinze, Christoph; and Wolff, Horst, 4,158,092, Cl. 528-500.000.
WOMAKO-Maschinenkonstruktionen GmbH: *See*—
Fabrig, Paul, 4,157,821, Cl. 270-53.000.
Wong, Mon N.; and Ibrao, Stanley T., to Hughes Aircraft Company. Compact, in-plane orthogonal mode launcher. 4,158,183, Cl. 333-21.00A.
Woo, John, Jr.; and Lien, Yeong-Chung E. Electronic rule for precise distance measurement and distance setting. 4,158,229, Cl. 364-562.000.
Wood, Louis L., to W. R. Grace & Co. Urethane foams having low resiliency. 4,158,087, Cl. 521-137.000.
Wouda, Hermanus A. J., to D.E.J. International Research Company B.V. Coffee extraction. 4,158,067, Cl. 426-432.000.
Woycheshin, Elias A.: *See*—
Murphy, James F.; and Woycheshin, Elias A., 4,157,911, Cl. 71-34.000.
Wrigglesworth, Stanley, to Rodway Optical Industries Limited. Control means for a lens-edge grinding machine. 4,157,636, Cl. 51-101.0LG.
Wrulich, Herwig: *See*—
Schetina, Otto; Wrulich, Herwig; and Zitz, Alfred, 4,157,773, Cl. 222-263.000.
Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., to Gulf Research & Development Company. Preparation of ethylbenzene hydroperoxide. 4,158,022, Cl. 568-571.000.
Wuthrich, Paul, to Timex Corporation. Alarm switch and alarm set device. 4,157,646, Cl. 58-19.00B.
WWG Industries, Inc.: *See*—
Norris, Alan H., 4,157,683, Cl. 101-211.000.
Wyckhuys, Jozef, to N. V. Bekaert S.A. Transport mechanism for changing bobbins in a winding-up apparatus for wire. 4,157,792, Cl. 242-25.00A.
Xerox Corporation: *See*—
Bollman, James E., 4,157,869, Cl. 355-4.000.
Yaffe, Roberta; and Reinhard, Russell R., to Texaco Inc. Synthetic aircraft turbine oil. 4,157,970, Cl. 252-46.700.
Yaffe, Roberta; and Reinhard, Russell R., to Texaco Inc. Synthetic aircraft turbine oil. 4,157,971, Cl. 252-46.700.
Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,157,916, Cl. 96-56.500.
Yahata, Tsuyoshi: *See*—
Izawa, Shinichi; Ohzeki, Jurou; Yahata, Tsuyoshi; and Nakanishi, Atsuo, 4,158,028, Cl. 260-876.00B.
Yamaguchi, Akihiro: *See*—
Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, 4,157,913, Cl. 96-1.50R.
Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, 4,157,914, Cl. 96-1.50R.
Yamaguchi, Namio: *See*—
Masuda, Mitsuya; Yamamoto, Keisuke; and Yamaguchi, Namio, 4,158,211, Cl. 358-195.000.
Yamamoto, Haruhiko; Udagawa, Yoshiaki; and Hirose, Yoshinao, to Fujitsu Limited. Printed circuit card construction. 4,158,220, Cl. 361-415.000.
Yamamoto, Keisuke: *See*—
Masuda, Mitsuya; Yamamoto, Keisuke; and Yamaguchi, Namio, 4,158,211, Cl. 358-195.000.
Yardney Electric Corporation: *See*—
Bilhorn, John M., 4,158,085, Cl. 429-130.000.
Yen, Chia M.; and Chang, Uck I., to Ford Motor Company. Surface alloying and heat treating processes. 4,157,923, Cl. 148-4.000.
Yockey, Francis J.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,228, Cl. 364-200.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,231, Cl. 364-710.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,158,233, Cl. 364-754.000.
Yokota, Hideo, to Canon Kabushiki Kaisha. Single-lens reflex camera. 4,157,867, Cl. 354-158.000.
Yoshikawa, Toshiharu: *See*—
Tanaka, Kyoichi; Mio, Takeshi; Takahashi, Kozo; and Yoshikawa, Toshiharu, 4,157,892, Cl. 8-14.000.
Yotam, Reuben; Lass, Yoram; and Caspi, Abraham, to Ramot University Authority for Applied Research & Industrial Development Ltd. Electrocardiograph apparatus capable of discerning the H-wave in the P-Q interval. 4,157,711, Cl. 128-708.000.

Young, Lewis B.: *See*—
Kaeding, Warren W.; and Young, Lewis B., 4,158,024, Cl. 585-467.000.
Yuan, Sun-Shine: *See*—
Bodor, Nicolae S.; and Yuan, Sun-Shine, 4,158,005, Cl. 546-15.000.
Yugen Kaisha Watanabe Kenkyusho: *See*—
Watanabe, Katsumi, 4,157,832, Cl. 274-1.00A.
Z-L Limited: *See*—
Zilliken, Fritz W., 4,157,984, Cl. 252-407.000.
Zacky, Ralf G. Panel support system. 4,157,852, Cl. 312-140.000.
Zeldin, July R.: *See*—
Evdokimov, Valery N.; Zeldin, July R.; and Kuznetsov, Vladimir A., 4,158,128, Cl. 219-469.000.
Zenith Radio Corporation: *See*—
Schwartz, James W., 4,158,157, Cl. 315-366.000.
Zentralinstitut fur Schweisstechnik der DDR: *See*—
Tomasch, Wilhelm, 4,157,777, Cl. 226-112.000.
Zilliken, Fritz W., to Z-L Limited. Antioxidants, antioxidant compositions and methods of preparing and using same. 4,157,984, Cl. 252-407.000.
Zimmer, Ernest C. Fireplace stove. 4,157,704, Cl. 126-62.000.
Zimmerman, Joe E.: *See*—
Campbell, Richard A.; Hudgins, Jerry L.; Morris, Paul W.; Reid, Harry, Jr.; and Zimmerman, Joe E., 4,157,655, Cl. 73-12.000.
Zipper, Jaime. Method for effecting female sterilization without surgery. 4,158,050, Cl. 424-14.000.
Zitz, Alfred: *See*—
Schetina, Otto; Wrulich, Herwig; and Zitz, Alfred, 4,157,773, Cl. 222-263.000.
Zoecon Corporation: *See*—
Anderson, Richard J., 4,158,096, Cl. 560-262.000.
Zuvela, Bernard R., to Scientific Drilling Controls. Inclination and direction responsive apparatus. 4,157,619, Cl. 33-352.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alpha Industries, Inc.: *See—*
Borzym, Alexander, Re. 30,025, Cl. 83-319.000.

Avtex Fibers Inc.: *See—*
Smith, Frederick R., Re. 30,029, Cl. 128-285.000.

Borzym, Alexander, to Alpha Industries, Inc. Universal double cut die set. Re. 30,025, Cl. 83-319.000.

Cincinnati Milacron Chemicals, Inc.: *See—*
Kugele, Thomas G.; and Koeniger, Arthur F., Re. 30,032, Cl. 260-45.75S.

Coran, Aubert Y.; and Lambright, Arthur J., to Monsanto Company. Integral pneumatic tire and wheel comprising a wheel portion with axially spaced members. Re. 30,030, Cl. 152-323.000.

Coratomic, Inc.: *See—*
Purdy, David L.; Magovern, George J.; and Smyth, Nicholas P. D., Re. 30,028, Cl. 128-419.00P.

Hanna, Daniel C.; and Richardson, James S., to Hanna, Daniel C. Vehicle conveyor. Re. 30,026, Cl. 104-172.00B.

Hockman, Vernon J., to Oak Ridge Solar Engineering, Inc. Solar radiation collector and concentrator. Re. 30,027, Cl. 126-270.000.

Koeniger, Arthur F.: *See—*
Kugele, Thomas G.; and Koeniger, Arthur F., Re. 30,032, Cl. 260-45.75S.

Kugele, Thomas G.; and Koeniger, Arthur F., to Cincinnati Milacron Chemicals, Inc. Carbofunctional sulfur and carboxylate bridged tin compounds. Re. 30,032, Cl. 260-45.75S.

Lambright, Arthur J.: *See—*
Coran, Aubert Y.; and Lambright, Arthur J., Re. 30,030, Cl. 152-323.000.

Magovern, George J.: *See—*
Purdy, David L.; Magovern, George J.; and Smyth, Nicholas P. D., Re. 30,028, Cl. 128-419.00P.

Monsanto Company: *See—*
Coran, Aubert Y.; and Lambright, Arthur J., Re. 30,030, Cl. 152-323.000.

Norfin, Inc.: *See—*
Snellman, Donald L., Re. 30,031, Cl. 271-222.000.

Oak Ridge Solar Engineering, Inc.: *See—*
Hockman, Vernon J., Re. 30,027, Cl. 126-270.000.

Purdy, David L.; Magovern, George J.; and Smyth, Nicholas P. D., to Coratomic, Inc. Heart pacer. Re. 30,028, Cl. 128-419.00P.

Richardson, James S.: *See—*
Hanna, Daniel C.; and Richardson, James S., Re. 30,026, Cl. 104-172.00B.

Smith, Frederick R., to Avtex Fibers Inc. Absorbent mass of alloy fibers of regenerated cellulose and polyacrylic acid salt of alkali-metals or ammonium. Re. 30,029, Cl. 128-285.000.

Smyth, Nicholas P. D.: *See—*
Purdy, David L.; Magovern, George J.; and Smyth, Nicholas P. D., Re. 30,028, Cl. 128-419.00P.

Snellman, Donald L., to Norfin, Inc. Sheet stack jogging mechanism. Re. 30,031, Cl. 271-222.000.

LIST OF PLANT PATENTEES

Bradford, Virginia. Peperomia plant (Autumn Leaf). 4,425, 6-12-79, Cl. 88.000.

Jennings, Derek L., to National Seed Development Organisation Limited. Tayberry. 4,424, 6-12-79, Cl. 46.000.

Kirsch, Ted T. Lily named Gold Nugget. 4,428, 6-12-79, Cl. 68.000.

National Seed Development Organisation Limited: *See—*
Jennings, Derek L., 4,424, Cl. 46.000.

Ryan, John J. Impatiens plant — Mohawk. 4,427, 6-12-79, Cl. 68.000.

Williams, Ernest D. Rose plant. 4,426, 6-12-79, Cl. 7.000.

LIST OF DESIGN PATENTEES

Acorn Engineering Co.: *See—*
Morris, Earl L.; and Fields, Larry, 252,098, Cl. D23-49.000.
Morris, Earl L.; and Fields, Larry, 252,099, Cl. D23-58.000.
Morris, Earl L.; and Fields, Larry, 252,100, Cl. D23-58.000.

Airwick Industries, Inc.: *See—*
Mandon, Jean-Pierre; and Lecomte, Philippe, 252,102, Cl. D23-150.000.

Alps Motorola Inc.: *See—*
Fujita, Kazumasa, 252,084, Cl. D14-12.000.
Fujita, Kazumasa, 252,085, Cl. D14-12.000.

American Home Products Corp.: *See—*
Baxter, Hedwig, 252,105, Cl. D24-31.000.
Baxter, Hedwig, 252,106, Cl. D24-31.000.

Audiovox Corporation: *See—*
Lieberman, Edward, 252,071, Cl. D8-373.000.

Baxter, Hedwig, to American Home Products Corp. Necropsy board for large animals. 252,105, 6-12-79, Cl. D24-31.000.

Baxter, Hedwig, to American Home Products Corp. Necropsy board for large animals. 252,106, 6-12-79, Cl. D24-31.000.

Bell & Howell Company: *See—*
Hams, Kenneth A., 252,074, Cl. D10-97.000.

Bell Telephone Laboratories, Incorporated: *See—*
Genaro, Donald M.; McGarvey, John N.; and Sylvester, Gordon E., 252,087, Cl. D14-60.000.

Bogdanovsky, Stanislav P.: *See—*
Derkach, Gennady G.; Kovtonjuk, Vladimir A.; Bogdanovsky, Stanislav P.; Kuzmichev, Lev A.; and Makhonov, Boris B., 252,079, Cl. D12-9.000.

Bridges, Roy G. Container for pills or the like. 252,072, 6-12-79, Cl. D9-18.000.

Calverley, Richard R., to Computer Kinetics Corporation. Electronic processor. 252,086, 6-12-79, Cl. D14-42.000.

Cambra International Limited: *See—*
Woodhall, Michael B., 252,064, Cl. D6-185.000.

Carroll, James C.; and Johns, Victor D., to Phillips Petroleum Company. Bakery tray or the like. 252,114, 6-12-79, Cl. D3-67.000.

Carvallo, Marcel: *See—*
Urosa, Maria E. d. G.; and Carvallo, Marcel, 252,108, Cl. D21-27.000.

CBS Inc.: *See—*
Legnasky, Michael J.; and Moustakas, Matthew A., 252,112, Cl. D21-64.000.

Charlton Company, Inc.: *See—*
Spound, Albert M.; and Day, Robert C., 252,057, Cl. D6-36.000.

Cirrone, Umberto J. Novelty chair. 252,059, 6-12-79, Cl. D6-68.000.

Clugage, Robert G. Golf ball tee. 252,109, 6-12-79, Cl. D21-208.000.

Computer Kinetics Corporation: *See—*
Calverley, Richard R., 252,086, Cl. D14-42.000.

Cook, William J.; and Daher, Theodore G., to General Electric Company. Electric clock or similar article. 252,073, 6-12-79, Cl. D10-9.000.

Cory, Milton T.; and Phifer, Jerry A., to Radiator Specialty Company. Traffic post. 252,075, 6-12-79, Cl. D10-109.000.

Daher, Theodore G.: *See—*
Cook, William J.; and Daher, Theodore G., 252,073, Cl. D10-9.000.

Day, Robert C.: *See—*
Spound, Albert M.; and Day, Robert C., 252,057, Cl. D6-36.000.

Derkach, Gennady G.; Kovtonjuk, Vladimir A.; Bogdanovsky, Stanislav P.; Kuzmichev, Lev A.; and Makhonov, Boris B. Snow scooter. 252,079, 6-12-79, Cl. D12-9.000.

Effort, Wayne A. Toy vehicle. 252,113, 6-12-79, Cl. D21-76.000.

ElecTroMation, Inc.: *See—*
Voelkert, Donald F., 252,082, Cl. D13-24.000.
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